

Vladimir Beshanov
"Flying Coffins" by Stalin. "Down, and down, and down..."



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A new book by a leading anti-Stalinist historian. Continuation of the bestseller "Fought on the 'coffins'!" "The Flying

Guaranteed Coffin" - this is how the "Stalin's falcons" called the LAGG-3, which at the beginning of the war was considered the main "new type fighter", but inferior to the "Messers" in all respects. Knowingly lost to the enemy and the MiG-3, and even the Yak-1, not to mention the outdated "donkeys" and "seagulls". (How can one not recall the words of the commander of the Red Army Air Force Pavel Rychagov addressed to Stalin, which cost him his life: "You are forcing us to fly on 'coffins'!"). Contrary to the pre-war "dizziness with success" and propaganda hype, the "Stalin's falcons" could not fight on an equal footing with the Luftwaffe - from the first days of the war, the Fuhrer's "experts" seized undivided air supremacy, and our military aviation, outnumbering the enemy three times, demonstrated complete the combat capability and by the end of 1941 was knocked out by 90%, which cannot be justified either by the "suddenness" of the enemy strike, or by the airfields that "slept through" the war. The backlog of the Soviet Air Force did not succeed

liquidate before the very Victory - no matter how good the La-7 and Yak-3 were, at the end of the war the Germans had already launched jet fighters into mass production! Refuting the key Stalinist myths, this book exposes the scientific and technical failure and inefficiency of the totalitarian regime, for which tens of millions of lives had to be paid.

Vladimir Beshanov

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Chapter 1



Contrary to popular belief, until 1917 there was an aviation industry in Russia. Not as powerful as in the West, but dynamically developing and steadily increasing its potential. By the way, the first statesman who dared to become a passenger of an airplane was the Chairman of the Council of Ministers P.A. Stolypin. If before the First World War, the productivity of domestic

aircraft factories was about 480 aircraft per year, then in 1916 1384 heavier-than-air aircraft were produced (in the Soviet Union this quantitative indicator would be reached only after 15 years) and 1398 aircraft engines were assembled. The government heavily financed the aircraft industry, allocating large funds to contractors. In the industry, "worked", mainly, private or equity capital, not constrained by bureaucratic restrictions.

In October 1917, there were 34 aviation enterprises in Russia, employing up to 12,000 workers. Of these, 14 factories produced aircraft, seven - engines, three - propellers and skis, two - magnetos, one - aircraft instruments, the rest were being completed. Along with the firms that arose earlier - the "First Russian Aeronautics Association" S.S. Shchetinina (plant "Gamayun"), plants V.A. Lebedev in St. Petersburg, Taganrog and Penza, who assembled seaplanes and the famous Ilya Muromets multi-engine aircraft, the aviation department of the St. Petersburg Russian-Baltic Carriage Works, the Moscow Duka plant, the AA Anatra plants in Odessa and Simferopol, V.F. Adamenko in the Crimea - the production of aircraft was mastered by the enterprise of the Italian designer F.E. Mosca in Moscow, F.F. Tereshchenko near Kiev, F. Meltzer's factory in Petrograd. In the Kherson region, the largest experimental and research aviation center, Aviagorodok, was created. Long before Stalin's industrialization and the "five-year plan in four coffins"

in Russia, a system for training aviation personnel was developed and the organizational structure of Russian military aviation was created. Ya.M. biplanes appeared. Gakkel and A.S. Kudasheva, flying boats D.P. Grigorovich, fighters and heavy bombers I.I. Sikorsky, helicopters B.N. Yuriev, scouts V.N. Hioni. A.A. built their planes. Porohovshchikov, F.N. Bylinkin, L.D. Kolpakov-Miroshnichenko, A.A. Krylov, V.L. Moiseev, V.P. Nevdachin, V.F. Saveliev, AA Semenov. Aviation bombs and torpedoes, bomb releasers, machine-gun and cannon mounts, synchronizers, aircraft radio stations, cameras, navigational instruments, a backpack parachute were created, wind tunnels and laboratories were built, a fairly advanced technology for the manufacture of aircraft was worked out: acetylene welding was widely used, aggregate assembly and plasma-template method.

The largest increase in capacity was observed in engine building, mainly due to capital investments by French firms. In Moscow, in addition to the Gnome and Ron plant, the Salmson plant arose, and the construction of workshops for the Renault company began in Rybinsk. In 1916, the Duflon and Konstantinovich (Deka) plant was organized in Aleksandrovsk. The production of aircraft engines of their own design was also carried out by RBVZ, the Joint-Stock Partnership "Motor", and the carriage and automobile factory of P. Ilyin.

In 1917, it was planned to produce 2250 aircraft at all factories, a year later — to increase the productivity of the aviation industry to 3,000–4,500 aircraft.

After February, foreign entrepreneurs began to gradually curtail production and export capital abroad. The October Revolution and the Civil War led to the complete collapse of the Russian aircraft industry. In this area, the new government considered the cleansing of the Office of the Air Force from "counter-revolutionary elements" as the highest priority. Which task was successfully solved by specially appointed commissars, who considered aviation a purely bourgeois entertainment, like perfume and lipstick. At the same time, the sign was changed: from April 1918, the swastika in a white circle became the official emblem of the Red Air Fleet, though not for long.

On June 12, 1918, the aeronautical apparatus factories were assigned to the last category of supply of fuel, raw materials and electricity. Military orders have ceased. Thousands of workers and engineers, left without work, wages and "class food rations", went to free bread. The largest enterprises for some time still continued to function at the expense of accumulated stocks, producing 255 aircraft and 79 engines. Then nationalization followed, the refusal of the new government to pay external debts, foreign investments disappeared, and the former empire turned into a wild territory - the Soviet of Deputies, with which no one wanted to have

affairs.

In 1919, 137 aircraft and 77 engines were assembled in Soviet Russia, in 1920 - 166 and 81, respectively. , Sarapul and Karasubazar. Meltzer's Petrograd factory was redesigned to produce furniture, and an agro-technical plant burned down in Moscow along with a unique wind tunnel. Of the fourteen aircraft manufacturing plants, only three were left, which were in the most deplorable state: with runaway workers, equipment out of order, stolen tools, without heating and stocks of raw materials. The quality aviation wood accumulated over the years was used for firewood.

During this time, hundreds of qualified specialists left the country, unable to overcome their disgust for the ideals and principles of Marxism. Among them were the chief designer of the aviation department of the RBVZ I.I. Sikorsky, who became "helicopter pilot No. 1" in a foreign land, outstanding aerodynamics A.P. Van der Flit (author of the first domestic textbook) and M.E. Glukharev, strongman S.P. Timoshenko, academicians A.A. Lebedev (the theory of aircraft engines) and D.P. Ryabushinsky (founder and scientific director of the Kuchinsky Aerodynamic Institute), Professor G.A. Botezat, who developed the mathematical theory of aircraft stability (he was greeted with open arms at the US National Committee on Aeronautics), talented engineers VS Margulis, F.I. Bylinkin, V.V. Jordanov, M.L. Grigorashvili, M.M. Strukov, I.I. Makhonin, PC Komarnitsky, Yu.K. Otfinovsky, V.I. Yakimyuk, legendary pilots B.V. Sergievsky, A.N. Prokofiev-Seversky, B.V. Korvin-Krukovsky and many others. Russian designers successfully worked in the aviation industry of the USA, France, Germany, Belgium, Great Britain, founded aircraft construction in Japan, China, Yugoslavia, and Poland. The "Russian" aviation companies "Sikorsky Corporation", "Seversky Aircraft", "Chase Aviation Company", "IDO", "Helicopter Corporation of America" gained worldwide fame. Order of the Legion of Honor - for

outstanding contribution to the development of French aviation - was awarded to V. A. Lebedev.

Scientists and designers who decided to stay "in the homeland of the victorious proletariat" catalyzed around Professor N.E. Zhukovsky, on whose initiative the Central Aerohydrodynamic Institute (TsAGI) was established in December 1918 by government decree. The Institute united the employees and the base of three aviation organizations: the Calculation and Research Bureau at the Aerodynamic Laboratory of the Imperial Moscow Technical School, the Kuchin Aviation Institute and the "Flying Laboratory" at the Central Aerodrome.

The institute was headed by the Collegium chaired by N.E. Zhukovsky and MTU graduate A.N. Tupolev. V.P. Vetchinkin, A.A. Arkhangelsky, B.S. Stechkin, N.I. Ivanov, N.V. Krasovsky. The specialists of the new center were engaged in the development of the scientific foundations of modern aviation on the basis of theoretical and experimental studies of aerodynamics, hydrodynamics and flight dynamics of aircraft, their strength. In 1918-1920, the Red Army was armed with about 300 aircraft of various designs. The replenishment of the fleet

was carried out mainly by repairing damaged and captured aircraft. At the end of the Civil War, there were 65 squadrons with an average of five dilapidated aircraft each.

"It's no secret to anyone," wrote the journal "Bulletin of the Air Fleet," that our native Red Air Fleet is on the verge of death: there are almost no new aircraft, old ones can no longer be repaired, a few trophy ones captured from counter-revolutionaries will also soon fail. . On January 26, 1921, a special commission was created in Moscow, which developed a

three-year program for the development of "aeronautics and aircraft construction." The essence of the program was simple: in parallel with domestic production, acquire (buy or steal) in the West for the needs of the Air Force the necessary models of equipment and licenses for its construction.

In 1921-1922, 150 German military aircraft of the First World War period were purchased abroad - Halberstadt, Fokker D-V11 and others. Another 70 aircraft - "Avro", "Martinside", "De Havilland" - were purchased in England. At the end of 1923, an agreement was signed with the Fokker subsidiary in Amsterdam for the supply of 200 reconnaissance and C-IV and D-X1 type fighters. In the same period, 30 Balilla A-1 fighters, 50 SVA-10 scouts, about 20 A-300 scouts, and fifty Savoy S-16 flying boats were purchased from the Italian company Ansaldo. And another hundred British Martinside F-4 fighters.

As this will be repeated many times later, as soon as the Bolsheviks became concerned about the security of the country, a mortal famine began in it. Which is quite natural, given that in 1921 the value of the gross output lying in the ruins of Soviet Russia amounted to only 1344 million rubles, 11.5 million rubles were spent on the purchase of aircraft, aircraft engines and spare parts for them in 1922, the total amount of the transaction with Fokker - 3.6 million. In addition, a quarter of the national income of the former great railway power was invested in the construction of steam locomotive plants in Sweden; The Comintern received 5.5 million gold rubles in 1922 for the maintenance of the "fraternal" Communist Parties (a gold ruble then "cost" 6.38 French francs); the askers of the Turkish general Mustafa Kemal were generously supplied with gold and weapons, and you never know what expenses. For example, they bought 60,000 sets of leather uniforms for valiant Chekists and paid for a monument to Karl Marx in central London. And what about the 300 million marks allocated in 1923 for the implementation of the "German October"? And how many suitcases with currency and diamonds went into organizing the "proletarian uprising" in Bulgaria?

Most of the airplanes purchased abroad were morally obsolete, and sometimes simply defective machines, including due to the roguery and illiteracy of the Soviet agents who received them. So, in the report of A.P. Onufriev, director of the State Aviation Plant No. 1, addressed to I.V. Stalin, K.E.

Voroshilov and V. V. Kuibyshev, it was noted that the sample of the Fokker D-XI aircraft during the preliminary test was found unsuitable for adoption.

In 1923–1924, the flagship of the domestic aircraft industry GAZ-1 (former Duque) produced 23 Newport 24bis, 18 Sopwiths and 19 Dehavilands.

The Petrograd GAZ-Z "Red Pilot" (former RBVZ, together with the Gamayun plant), engaged in the repair of cars and engines, in 1923 launched the U-1 training biplane, copied from the English Avro-504K. In the same year,

GAZ-1, followed by the Taganrog aircraft plant GAZ-10 (the former enterprise of the Lebed joint-stock company) began to deploy the production of a two-seat "domestic" reconnaissance aircraft and light bomber P-1. The design of this biplane was designed by a student of I.I. Sikorsky, who graduated from the St. Petersburg Polytechnic Institute of Emperor Peter the Great, mechanical engineer HH Polikarpov, who creatively copied, based on the available possibilities (for example, due to the lack of small nails, the canvas was sewn to the ribs with twine) and materials (instead of wood, where possible, they used plywood and steel pipes, and instead of American spruce - Soviet Siberian pine), the British De Haviland DH9 glider with the American Liberty 400-horsepower liquid-cooled engine. The technology was developed by engineer BC Denisov. By the way, "DH4 drawings were found that came to Russia back in 1917 and were already brought into line with the domestic system of measures, materials and technology at that time," and more than a hundred ready-made DH9s were purchased for the Red Air Fleet. Of course, our historians have always argued that the R-1, built in mass series until 1931 with a total of 3032 copies, "although outwardly it resembled its British predecessor, it was, in essence, a new aircraft and in terms of a number of characteristics, in particular, carrying capacity, surpassed both DH4 and DH9. In addition to this "particular", the Soviet clone with similar armament (two English machine guns - the

Vickers course and the Lewis turret) and a shorter flight range weighed 670 kilograms more than the DH4 of the 1916 model with a 375-horsepower engine (and on 240 kg more than the DH9), flew 40 km/h slower and one and a half kilometers lower. Moreover, the first serial samples were surrendered without weapons or with one synchronous machine gun.

HH Polikarpov himself, running for full membership in the Academy of Sciences, compiled in 1943 a list of 24 points of successfully solved scientific and practical problems. Half of the list is marked: "For the first time in the USSR" or "First in the world." There are even "streamlined winter skis for heavy aircraft", but Nikolai Nikolayevich did not even remember about the R-1. Great pilot M.M. Gromov, without delving into the intricacies of technology, wrote: "This aircraft was an exact copy of the British De Haviland DH-9 aircraft with a 400 hp engine."

At the same time, the design teams of HH Polikarpov and D.P. Grigorovich, on the instructions of the military, they tried to create a modern, high-speed and maneuverable fighter. The team of

D.P. Grigorovich (unlike the HH Polikarpov group, which developed a monoplane fighter, on which pilot K.K. Artseulov almost died) decided to build a traditional biplane, which in 1926 became the first Soviet serial I-2-bis fighter, which developed a maximum speed of 220 km/h and was armed with two machine guns. For three years, more than 200 rather mediocre aircraft were built at the GAZ-1 and GAZ-Z plants. Assistant to the head of the Air Force Research Institute for the technical part E.K. Stockman in 1927 gave the car the following assessment: *"According to the conclusion of the*

Research Institute, the I2-bis aircraft is completely unsuitable as a modern fighter due to its low rate of climb, small ceiling and very poor maneuverability."

Engines for all this "flying zoo" had to be bought. For the engine building for a long time was the most backward branch of the Soviet

industry. In 1921-1924, the import of aircraft engines amounted to 1032 engines of various companies - the English Daimler and Sydney-Puma, the American Liberty and Spa, the French Ron and Hispano-Suiza, the German Maybach, Mercedes and BMW, Italian Fiat. Traveling salesmen all over Europe were happy to sell their "comrades" at breathtaking prices the goods stale after the world massacre, sometimes completely inoperative or with fake factory brands.

In order to eliminate the acute dependence on the West, starting from 1924, some foreign engines began to be produced in the USSR, "naturally", without any licenses. At the GAZ plant No. 4 Motor, they mastered the M-5 (aka Liberty-12), the GAZ plant No. 2 Ikar (former Thunder and Ron) produced 80-horsepower M-1 (Ron)), plant GAZ No.-9 "Bolshevik" - M-6 ("Hispano-Suiza 8Fb"). It was the 400-

horsepower M-5, mastered under the guidance of the famous heat engineer Professor N.R. Brilling and engineer A.D. Shvetsov, installed on the R-1 and I-2 machines. In this regard, it is amusing to read in the "Military Historical Journal" the statement of the first deputy head of the department of the Main Staff of the Air Force that the "reconnaissance aircraft R-1 had a domestically designed engine."

On December 6, 1924, by a special decree of the Presidium of the Revolutionary Military Council of the USSR, the Air Force was allowed to purchase another 710 aircraft engines, including 150 Sydney-Puma, 50 Napier, 270 Lorrain-Dietrich, 15 Fiat, 150 Liberty, 75 "BMW-IV". Soon I had to place an order for another 1740 engines. Military attache in Paris L.G. Mironov managed in 1925 to get about 4,000 Ron rotary motors lying around in a private warehouse; purchased practically at the price of scrap metal; under the "name" M-2, they provided flights for Soviet training aviation for several years to come.

The fact is that from a financial point of view, it was more profitable to buy aircraft abroad. At domestic factories, although they reproduced foreign designs, they did it according to their own artisanal technologies. For example, due to the lack of powerful presses, forty-five-kilogram crankshafts for the M-5 engine were machined from blanks weighing almost a ton. As a result, the "engine of domestic design" cost the country three times more than the exact same American Liberty, and was 20% heavier, and the R-1 aircraft cost one and a half times more than the "very similar" DX9 delivered from England. Not to mention the difference in product quality.

Great help to Soviet Russia was provided by friends from defeated Germany. Under the terms of the Treaty of Versailles, the Germans were categorically forbidden to own and build airplanes, so they had to scrap 14 thousand cars. After the signing of the corresponding agreement in Rappallo between the two European outcasts, secret cooperation in the military sphere began.

In November 1922, a concession agreement was signed with the Junkers company, which was the first in the world to establish serial production of duralumin monoplanes, for the construction and equipment of a large aviation enterprise in Fili near Moscow for the production of all-metal aircraft, aircraft engines and rolled duralumin. The military circles of Germany hoped as a result to get a testing ground for the development of German aircraft. The Soviet government also had high hopes for cooperation with Junkers. It was planned that this firm would lay the foundation for the entire aircraft industry. Under the terms of the contract, the plant in Fili was leased for thirty years, and its productivity was to reach at least 300 aircraft and 450 aircraft engines per year.

year.

However, the hopes did not come true. During the four years of the concession's existence, only 20 Yu-20 seaplanes and a little more than a hundred Yu-21 reconnaissance aircraft were made. In addition, the Junkers plant in Sweden delivered 15 three-engine metal bomb carriers Yug-1. All cars had characteristics below those promised. At the beginning of 1925, due to disagreements between the concessionaires, mainly financial, production was practically stopped, most of the German specialists left for the Fatherland. To prepare for

The company did not even start producing aircraft engines. The vigilant security officers came to the conclusion that the Junkers firm was in fact a spy organization whose goal was the collapse of the Soviet aircraft industry. It is only unclear what exactly the Germans were going to ruin. It is even more interesting that, having recently brought the Bolsheviks to power, now, through the Junkers firm, senselessly, from the point of view of the political alignment of forces in Europe, they wanted to achieve not only "weakening the military power of our country", but also passionately dreamed of "restoring monarchical order."

In March 1926, the Politburo of the Central Committee of the All-Union Communist Party of Bolsheviks ordered the termination of the contract with the Junkers firm. They decided to develop Soviet aviation, relying on their own strength. All the more so since there have been encouraging developments.

In 1922, at the Gospromtsvetmet plant in the village of Kolchugino, Vladimir Region, under the guidance of metallurgist Professor I.I. Sidorin, engineers V.A. Butalov and Yu.G. Muzalevsky received the first batch of aluminum alloy ingots, called chain aluminum. It was recognized that the alloy is not inferior in its properties to foreign analogues and can be used in aircraft construction. In the autumn of the same year, a Commission for the construction of all-metal aircraft was formed at TsAGI, chaired by A.N. Tupolev as part of I.I. Sidorina, G.A. Ozerova, I.I. Pogossky. From the work of this commission, in which A.I. Putilov, V.M. Petlyakov, B.M. Kondorsky, N.S. Nekrasov, in fact, the history of the Tupolev Design Bureau begins. Before taking on aircraft, the technology was tested on snowmobiles and gliders. The sled was followed by the ANT-1, an aviette built from traditional materials, but with the use of Kolchugino aluminum. In May 1924, the first Soviet all-metal aircraft ANT-2 took off. After the technology of using aluminum chain

mail in aviation was sufficiently developed, the commission for the construction of all-metal aircraft was abolished and in September 1925 the design bureau AGOS (aviation, hydroaviation and pilot construction) was formed at TsAGI, which became a monopolist in the field of metal aircraft construction - including sense that other organizations were expressly forbidden to design combat aircraft from metal. In general, the attitude of the Soviet government towards unauthorized creativity, creativity without an order or "coordination", is clearly seen from the anecdote told by the People's Commissar of

Ammunition B.L. Vannikov:

"Once Stalin told me on the phone that he had received a message from HA Bulganin about a front-line soldier who very easily converted a seven-shot rifle into an automatic one.

"I instructed," Stalin said, "to reward the author for a good offer, and to punish the unauthorized alteration of weapons with several days of arrest ... ". At

the same time, the Tupolev group completed the creation of a two-seat metal reconnaissance aircraft ANT-3 (P-3), and the P.O. Sukhoi began designing the ANT-5 (I-4) fighter. In March 1927, the concession with Junkers was liquidated, and the plant in Fili, after two years of inactivity, became part of Aviatrest under the name Plant No. 22. It began preparations for the

release of A.N. Tupolev. Historiographer of Soviet aviation V.B. Shavrov notes that the Tupolev machines were rational, thoughtful, "not inferior in all respects to Junkers designs." Still would! It was from Junkers that ideas were stolen, developed and became domestic. So, in a report addressed to People's Commissar of Defense K.E. Voroshilov reported:

"1) All the necessary
drawings, materials, etc.

2) A group of Russian engineers who previously worked for Junkers, on the basis of

of these materials and her experience in every detail developed the organization of production, templates, machines, a card system for accounting and processing orders, etc. This development was occupied by a group of engineers for several months. The results of this development were partly used in the repair of Yu-20, Yu-21 and Yu-13 and in the production of TsAGI scouts at the M-5 plant.

The TsAGI scout is just ANT-3. Acquaintance with the German experience greatly facilitated the introduction of domestic aircraft made of duralumin into mass production. Working together with German specialists, Soviet workers got acquainted with the latest techniques for assembling aircraft, and engineers studied and mastered the most advanced technologies. They mastered it so well that three years later the Junkers company filed a lawsuit against TsAGI, trying to defend their copyrights on the design and production method of the metal wing. Of course, the Germans did not receive any satisfaction of their claims. Firstly, the Soviet monoplane with a thick profile wing and corrugated skin was built "before G. Juncker received patents for such a design in the USSR." Secondly, A.N. Tupolev was forced to adapt someone else's technology to the capabilities of the domestic industry and thus created the "original wing design." The originality, for example, lay in the fact that at Junkers the wing was docked to the center section with the help of union nuts, and Andrei Nikolaevich used cone bolts for this. In fact, TsAGI could not boast of its own achievements at that time. In the "Report on experimental construction", prepared by Aviatrest in October 1927, it was said about the activities of the institute:

"This institute has given almost nothing to our industry during its existence. For 7 years from the date of foundation, TsAGI was mainly engaged in the construction of new laboratories, buildings, etc.; in relation to scientific work, there were a number of initiative works that were of interest to individual heads of departments, while TsAGI often remained deaf to the demands of industry.

From the practical work of TsAGI, we can note the release of an album of a series of screws, which is not the result of our own experiments, but the processing of American tests; then calculated norms were developed (also processing of foreign, mainly American norms). In the absence of standard calculation methods, in the absence of albums of aerodynamic blowdowns, in the absence of research, theoretical time, the aircraft industry, especially its construction branch, ~~factory works could not use~~ ^{experimentalists could not use} information from foreign literature, which caused an unnecessary waste of time and money (for example, in the Experimental Department of GAZ No. 1, an information section is organized that processes foreign literature, although this work would be closer to TsAGI). Of the vital departments of TsAGI, it should be noted the aircraft building department, which produced several metal aircraft. But, in essence, this work on experimental aircraft construction should not be the work of a scientific institute ... "

According to the last point, A.N. Tupolev had his own opinion: all experimental aircraft building should be concentrated in a single scientific center equipped with the latest technology. By this time, a large wind tunnel of the closed type T-1-2, built under the direction of A. M. Cheremukhin, began to function at TsAGI. It had two working sections (3 m and 6 m), at the time of construction it was considered the largest in the world and, due to "significant difficulties with metals, their assortment and sheet materials", was made of wood and plywood.

The R-3 aircraft, put into production in the summer of 1927, was a two-seat single-pillar polutoraplan with a trihedral fuselage. frame

assembled from chain-aluminum profiles, the outer skin - from sheet corrugated chain-aluminum. The armament consisted of one synchronous machine gun for firing through the propeller and a twin turret in the rear cockpit, where the gunner-observer was located. Up to eight small bombs were attached to the outer suspension. Various types of engines were tried on the car: the American Liberty was replaced by the domestic M-5, the English Napier-Lion and the German BMW VI were installed. In the end, they bought a hundred Lorraine-Dietrich engines with a capacity of 450 hp from the French. The new reconnaissance aircraft, which developed a maximum speed of 200 km / h, fully met the requirements of military aircraft. By the spring of 1929, 22 R-3 aircraft were transferred to the Air Force units (due to the "very rear centering", radio equipment and defensive weapons were not mounted on them) and 79 R-ZLD aircraft. The I-4 fighter is a single-seat all-metal strut wing-and-a-half wing with an air-cooled engine of

French origin Gnome-Rhone-Jupiter-IV with a power of 420 hp. developed a speed of 250 km / h and during the tests was recognized as a machine that in all respects is not inferior to the best fighters in the world. True, as V.B. Shavrov: "The flight qualities of production aircraft were lower than those of experimental and lead aircraft, and the aircraft could no longer be considered among the advanced ones. The use of corrugated skin, protruding ribs and stringers, the absence of fairings at the ends of the struts and even on the spokes of the wheels gave a lot of resistance, which was very sensitive for the small size of the aircraft. In addition, in the I-4 series, it turned out to be almost 1000 kg heavier than the ANT-5, which had a take-off weight of 1343 kg. Even with the new "Jupiter-VI" in 480 "horses", the maximum speed of the fighter did not exceed 230 km / h, the ceiling - 7000 m. Strikingly similar to it, almost identical in layout, size and armament, the French "Devouatin" D-27 model 1927 years (with a smooth duralumin skin and wheels without spokes) flew at a speed of 270 km / h and had a working ceiling of over 9000 m. The British Hawker Fury in 1929 squeezed 350 km / h. Nevertheless, the I-4 was produced in different versions from 1928 to 1933. About 400 were built in five years

machines.

The heavy twin-engine all-metal monoplane ANT-4 with Napier-Lion engines with a take-off weight of 6712 kg had a maximum speed of 214 km / h and a practical ceiling of 4830 m. For mass production under the TB-1 brand, 12-cylinder liquid-cooled engines were installed on the aircraft BMW VI rated at 500 hp The bomber had a crew of six, was equipped with three machine-gun sparks, the bomb load was 1000 kg, the flight range was 1000 km.

The TB-1 was a landmark machine, the prototype of all subsequent multi-engine cantilever monoplane bombers. In total, the Soviet Air Force received 218 copies of the TB-1, which were in service until 1936. According to the classification that arose in those

years, heavy bombers were called "airships". To accompany them, military theory demanded that the Air Force have multi-purpose "air cruisers". Therefore, in parallel, the AGOS TsAGI design bureau designed and built "an aircraft for long-range reconnaissance, bomber escort and air combat" - R-6 (ANT-7). It was a reduced copy of the TB-1 bomber. The speed of the car increased by more than 50 km / h at the same range. The crew - four people, including one shooter in a tilting turret pulled down, by the way, borrowed from Junkers, who used it on Yug-1. Armament - five machine guns.

In the bureau of HH Polikarpov, who became the chief designer of the Land Aircraft Department of the Central Design Bureau of Aviatrest, in 1927-1928 the I-3 fighter, the R-5 multi-purpose aircraft and the legendary U-2 "heavenly slug" were created. I-3

was a wooden polutoraplan with wings of different spans, with a BMW VI engine. Developing speeds up to 283 km / h, he had good maneuverability and

sufficiently high flight and combat qualities. The Soviet Air Force received about 400 such aircraft.

Double reconnaissance R-5 - increased in size I-3, which developed a speed of 230 km / h, had a ceiling of 5900 m, a flight range of 1000 km, armament - two machine guns. In the attack version, the aircraft was equipped with seven machine guns and carried up to 300 kg of bombs. The excellent machine was built at plant number 1 in large series (6826 copies in total) in various modifications and was in service until 1944. In addition, in

1927, in order to acquire the latest aviation technology, the Air Force Directorate transferred the technical requirements for the development of a single-seat fighter for the USSR to Ernst Heinkel. In the summer of the following year, the aircraft, designated HD-37, was delivered to Moscow. It was a biplane with a ground speed of 300 km / h, with a steel tube fuselage, a wooden wing and canvas covering. According to the test results of Ya.I. Alksnis reported to the Deputy Chairman of the RVS I.S. Unshlikhtu:

"In terms of flight qualities and maneuverability, the HD-37 aircraft leaves far behind the aircraft supplied by the UVVS - Fokker DX1 - Hispano-Suiza Z00NR, I-2 and I-2 bis - M5 and higher-built experimental aircraft I-3 - BMW VI and I-4 - Jup. IV".

In the autumn of 1929, 150 thousand marks were forfeited for the right to build such a wonderful machine and provide technical assistance to the Heinkel company. It was decided to build a new fighter under the designation I-7 at plant number-1. While the HD-37 was being tested, HH Polikarpov was commissioned to create his own fighter with a welded metal frame. And they even planned a designer's business trip to Heinkel's factories "to clarify all issues related to obtaining technical assistance for welded aircraft."

Only the Department of Naval Experimental Aircraft Construction, which since 1925 was headed by D.P., did not please with success. Grigorovich. The department was engaged in the design of domestic seaplanes, but for three years of work it was not able to present a machine suitable for adoption. At one of the meetings of the Politburo I.S. Unschlicht stated:

"The situation is much worse in the field of seaplane construction, since all the hydraulic machines that have come out so far from our experimental construction have turned out to be unsuccessful and unsatisfactory to the requirements for them.

The Aviatrust memorandum on this matter stated:

"We are terribly poor in the field of hydroaviation. Poor not only in the sense material (we have a meager number of seaplanes), but even poorer:

- a) in theoretical knowledge (almost nothing was worked out and published on hydrodynamics and hydroaviation);
- b) in the design experience in hydroplane building (very few boats were built);
- c) materials for the water part of wooden seaplanes (waterproof glue, waterproof plywood, varnishes and coatings);
- d) production knowledge; e) production capabilities (factories and hydrodromes).

To solve the problem in August 1928, the aircraft designer Paul Richard was discharged from France. At plant No. 28, the OPO-4 department was formed, to which specialists and all the experimental aircraft of Grigorovich, who was suspended from work, were transferred. In the new bureau, the future general designers N.I. Kamov, M.I. Gurevich, S.P.

Korolev, I.V. Chetverikov, G.M. Beriev, S.A. Lavochkin. Initially, Richard had a large program to create a dozen different machines. Then it was gradually reduced and only TOM-1, an open sea torpedo bomber, was brought to the construction of a prototype. However, he did not go into the series either. Richard drove off to his homeland, and flying boats still had to be bought abroad. Following the float "Junkers", aircraft of the Italian company "Savoye", German "Dornier" and "Heinkel" were purchased, some of which were converted and built at domestic factories under the brands MBR-4 and KP-1. All Soviet aircraft were originally equipped with British Lewis and Vickers machine guns. In 1928, by order of

the Revolutionary Military Council, the 7.62-mm aircraft machine gun PV-1 was adopted by the Red Army Air Force, which was a modification of the Maxim machine gun, carried out according to the project of the pilot and inventor A.V. Nadashkevich. The PV-1 weighed 14.5 kg, had a rate of fire of 750 rounds per minute and an initial bullet speed of 865 m/s. In all respects, it was the same Vickers - and its "dad" was Maxim - transferred from a water to an air cooling system. A Soviet study by D.N. Bolotin reports that, nevertheless, "our system" was superior to the British one, since a buffer spring was introduced in it to increase the rate of fire, "which imparted additional speed to the mobile system when it moved forward and took on the blow when it retreated". And this buffer spring was "a novelty that has not yet been used in the creation of machine guns in foreign practice. Another thing is interesting: a modern Russian author repeats the praises of the PV-1 word for word, completely forgetting that forty pages earlier he himself stated that "the rate of fire of Vickers machine guns increased ... due to the strengthening of the buffer springs, which sharply increase the speed of moving parts when firing."

For turrets to replace the Lewis, a 7.62-mm Degtyarev aircraft machine gun was developed, obtained by altering the DP infantry machine gun. The rate of fire of the DA was 600 rds / min, the muzzle velocity was 840 m / s. Ammunition was fed from a three-row magazine with a capacity of 63 rounds. Machine gun weight - 11.5 kg. Two years later, the DA-2, a system of two Degtyarev machine guns connected together, entered service. With equipped magazines, sparka weighed 25 kg.

In 1927, the Red Air Fleet had 698 combat aircraft, an unacceptably small number. After all, according to the doctrine, it was necessary to fight with the entire "external environment". In connection with the "military alarm" M.N. Tukhachevsky reported to the Council of Labor and Defense: "Neither the Red Army nor the country is ready for war." Therefore, speaking at the XV Congress of the RCP (b), People's Commissar K.E. Voroshilov formulated the tasks of industry as follows:

"The five-year plan for the national economy must proceed from the inevitability of a military attack on the USSR and, consequently, from the need to measure the material resources of such an organization for the defense of the Soviet Union, which would ensure a victorious rebuff to the combined forces of our potential opponents." What were

all the immediate neighbors on the western, southern and eastern borders - from Finland to Japan. It had to be taken into account that this was only the first echelon of world imperialism. The capitalists of England and France dreamed of taking part in the second.

The resolution of the Politburo of the Central Committee of the RCP (b) "On the state of defense of the USSR" of July 15, 1929 stated that "the technical base of the armed forces is still very weak and far behind the technology of modern bourgeois armies." According to the decree, by the end of the first five-year plan, the air force was to have at least 3,500 aircraft. It was pointed out to the military department that the Red Army was obliged "in terms of numbers - not to be inferior to our potential opponents in the main theater of war, in terms of technology - to be stronger than the enemy in two or three decisive types, namely, in the air fleet, artillery and tanks." In response, the military presented the S-30 mobilization plan, according to which the needs of the army in case of war by the beginning of 1932 were determined at 7000

aircraft.

On October 20, 1929, the Office of the Air Force sent its proposals to the STO "On the five-year plan for the experimental construction of the Air Force for 1928/1929–1932/1933." The document noted that the Department's specialists studied 675 types of aircraft of foreign designs, of which 62 types were selected as samples in pilot production. The military asked for additional funding to study foreign experience and provide financial support to TsAGI and NAMI. By this time, a number of quite modern models of aviation equipment had been created in the

USSR. However, the existing factories could not meet the growing demand. Serial aircraft were built at four aircraft factories, besides, "the quality side of the manufactured products clearly lagged behind the requirements of the time." So, by September 20, 1929, factory No. 22 provided only 32 of the 70 ordered I-4 fighters, and military acceptance accepted only two.

The introduction of new samples into the series was slowly moving forward. The industry continued to produce the rapidly obsolete P-1, which then accounted for up to 50-60% of all products. There was a lack of industrial enterprises, their poor technical equipment, and a lack of engineering and skilled workers.

It took a year and a half to hand over a hundred R-3 aircraft, after which they were taken out of production and replaced in the series with the Polikarpov R-5

reconnaissance aircraft. If it took nine months to create and build a prototype TB-1, then it took four years to organize mass production. However, here the story is more interesting. Initially, Tupolev made a remote-controlled projectile, and ordered it not from the Scientific and Technical Committee of the Air Force, but from the Special Technical Bureau for Military Inventions for Special Purposes (Ostekhbyuro) to implement the congenial idea of the self-taught inventor V.I. Bekauri: the plane, stuffed with explosives, took off in the traditional way, followed the target, on approach the pilot was thrown out by parachute, and the aircraft, controlled by the "telemechanical system" by the operator from another plane, fell on the target. Therefore, the lead ANT-4 was single-seat and did not have any weapons. He became a "medium bomb carrier" only two years later. In addition, in practice, the construction of all-metal giants turned out to be somewhat more difficult than it seemed at first. The introduction of the TB-1 was so delayed that aviation circles considered the issue of copying the French Farman-62 Goliath bomber under the TB-2 index, especially since it was already in service with the Red Air Fleet in the "import version" and proved to be quite good at pacification of the Chechen villages. In total, in 1928–1929, out of 985 ordered aircraft, the industry was able to issue only 30 copies of

TB-1.14 I-3 units and several R-5 units. Engines for them still had to be bought abroad, since neither the design bureau created under Aviatrest for

experimental engine building, headed by A.A. Bessonov, nor the Department of Aircraft Engines of NAMI under the leadership of A.A. Mikulin, nor the designers of the Ikar and Motor factories, united in 1927 into plant No. 24 named after M.V. Frunze, for five years of work, they could not offer anything suitable.

The country's best technicians dismantled dozens of foreign samples to the last screw, drew something of their own on newsprint (with a Whatman paper) that surpassed world analogues in all respects, and embodied it in metal - M-8, M-9, M-12, M-13, M-14, M-15, M-18, M-19, M-23, M-26, M-27...

And you turn it on - it doesn't

work! So, the Polikarpov machines I-3 and R-5 were originally supposed to be equipped with the M-13 engine, which was developed by engineers N.R. Brilling and A.A. Mikulin. However, all three prototypes of the motor fell apart during tests three minutes after launch, without gaining the promised power of 800 hp; the planes had to install a "weak" and heavy "German". Engines A.A.

Bessonov - an 18-cylinder M-18, an in-line M-19 with a driven centrifugal supercharger - seemed to work, but "for various reasons they did not go into the series." M-15 and M-26 were still "published" for a short time in small batches, but turned out to be unreliable even by Soviet standards; The M-27 was obsolete even before it was made. The only achievement of

domestic engine building was the 100-strong five-cylinder M-11 engine launched into series in 1928 (development of the GAZ-4 design bureau, suspiciously similar to the French Lorrain-Dietrich 5Pb). In the meantime, by 1930, Zaporozhye Plant No. 29 (former

GAZ No. 6) mastered the production of the French Jupiter-VI under the Soviet brand M-22, and Plant No. 26 in Rybinsk (former Russian Renault) began serial production German motor BMW VI, designated M-17. Regarding the last People's Commissar K.E. Voroshilov anxiously informed I.V. Stalin:

"On October 14, 1927, at our insistence and choice, Aviatrust concluded a license agreement for installations for the production of a modern BMW-VI engine, which left the experimental stage at the beginning of 1926. More than 2 years have passed; but we have not yet received a single serial motor from Aviatrest; the other day only a small series of 10 motors was presented for delivery. In addition, the most important parts - the crankshaft, rollers (bearings) - are not at all represented in our production, we buy them in Germany and only from August 1929 Aviatrest receives technical assistance from Krupp from them. Also, the production of magneto has not yet been delivered ... The newest BMW-VI engine in 1927, in the process of being put into production for 2 years, runs the risk of becoming obsolete before we supply it to the modern fleet.

The leading experts of the aviation industry wrote about the same to Iosif Vissarionovich on August 13, 1930: "It is known that in all 13 years we have not created a single finished aircraft engine that would be on our aircraft. For all the time in the Union, more than 40 aircraft engines were designed by different organizations, 30 of them were put into production, about 15 were built, but not one of them is and probably will not be on aircraft ... Our experimental construction is extremely fruitless.

Of the ten engines of the 1931 plan, four were actually built, and only one reached mass production. Yes, and the

saga with BMW dragged on for a long time, although one of the important reasons for its purchase was the opinion of Aviatrest specialists that: "This motor will provide less difficulties in production than any other." The contract with the firm came into force in October 1927. Drawings, technical descriptions, calculations, technological instructions, special tools, equipment, sets of all the most complex parts, crankshafts, gasoline pumps, electrical equipment, as well as about a hundred German engineers and workers were sent from Germany to Rybinsk. Carburetors were installed French type "Zenith"

60DCJ, which received a Soviet registration under the pseudonym

K-17. Plant No. 26 produced the first M-17s only in the spring of 1930, by the end of the year - 165 copies, then - in ascending order.

The only difference is that, unlike the German "boomer", our M-17, having left the assembly line, was unsuitable for operation, and was sent for special revision to the Central Aircraft Engine Institute. As noted at the All-Army Conference on the Quality of Aviation Products, the motor had 76 defects. At the same time, due to the violation of technology and the poor quality of the materials used, it produced less power and was heavier than the prototype by an average of 30 kg. Casting defects reached 50%, every tenth of the engines accepted by the customer was of a "lower condition", that is, it was suitable only as training aids or for transfer to civil aviation, whose needs were satisfied on a residual basis. In January 1930, the Labor and Defense Council instructed Plant No. 24 to master the M-17 as well. A set of drawings was handed over to Moscow, but not

handed over to the Germans. At the factory, they thought over the drawings and decided to simplify and improve the design. As a result, 30 "substandard" engines were manufactured, in which not a single piston was like another, after which production was

curtailed. Head of the Red Army Air Force Ya.I. Alksnis reported to the Revolutionary Military Council in July 1932: "The quality of the M-17 engines has dropped so much that every off-aerodrome flight on this engine begins to pose a serious risk not to return, but to have an emergency landing with all the ensuing consequences." It took another year for the Rybinsk plant to significantly improve the quality of its products, bring the engine life up to 150 hours and achieve maximum productivity.

Relatively simple, reliable, well mastered in production and operation, running on low-quality domestic fuel, standing on the stream until 1939, the M-17 became the most massive aviation (and tank) engine, replicated in the amount of 27,534 copies. On July 31, 1930, Deputy Commissar of the Military Sea I.P. Uborevich reported

to the Politburo that the plan for the military order for industry was being fulfilled by barely 10-15%. Of course, there was no harm done here. Red people's

commissars and directors categorically did not want to sign for voluntarism and their own illiteracy. The liberated proletarians, who became the "leading class", could not, by definition, spoil their native authorities. This means that the "caste of old specialists of tsarist Russia", who maliciously sabotaged the program of socialist industrialization, was to blame for the disruption of all plans. It turned out that every third engineer, especially those who received a pre-revolutionary

education, and even more so of non-proletarian origin, is a pest. Instead of Germany, the son of a "clergyman", who did not hesitate to wear a family Orthodox cross around his neck, HH Polikarpov ended up in Butyrka prison. During the investigation, he was reminded of a lot, including the fact that when testing his "wrecking" design 2I-N1, the crew of pilot V.N. Filippov. With the naked eye, "sabotage" was visible in the scheme of the Polikarpov I-1 (IL-400) fighter - a monoplane: the criminal intent was that in the event of a nose-over of the car, the "red falcons" would hit their heads on the ground, losing their health and professional skills - that's you and undermine the defense. In addition, Polikarpov sabotaged the execution, to put it mildly, of a wonderful order for the design of a two-seat small-sized aircraft "cavalry service" in long-range raids OK-1. It was assumed that this apparatus with folded wings would be dragged by the tail along the valleys and along the hills by a cavalry cart; if necessary, the structure was to be brought into flight readiness in 15-20 minutes.

Nikolai Nikolaevich did not resist for long, admitted his participation in the preparation of foreign intervention, and without trial was sentenced by the OGPU board to be shot as a spy and a "socially alien element." In the neighboring cells, other "saboteurs" were waiting for "fair revolutionary retribution": the author of the first serial fighter D.P. Grigorovich, employees of his seaplane department V.L. Corbin-Kerber, E.I. Majoranov, A.N. Sedelnikov, N.G. Mikhelson, the creator of the aviation machine gun A.V. Nadashkevich, engine builders N.R. Brilling, B.S. Stechkin, A.A. Bessonov, A.D. Charomsky, designers V.A. Tisov, I.M. Kostkin, V.V. Kalinin, statistical testing engineer P.M. Crayson and others. But someone had to make fighter jets. Therefore, in an

order signed by the Chairman of the Supreme Economic Council of the USSR V.V. Kuibyshev and Deputy Chairman of the OGPU G. G. Yagoda were instructed: "The organs of the OGPU should take all measures to ensure that wrecking engineers are used in the correction of sabotage." In December 1929, a group of

prisoners numbering about 20 people, led by Grigorovich and Polikarpov, were offered to prove their devotion to the Soviet Motherland by deed and, within three months, create a fighter aircraft that would surpass similar machines of potential enemies. Drawing boards were placed in two cells of the Butyrskaya prison,

pencils and called it the Special Design Bureau. As brilliantly

formulated by G.G. Yagoda: "Only working conditions in a militarized environment can ensure the secrecy and effective activities of specialists as opposed to the corrupting environment of civilian institutions." In January 1930, the design bureau (soon renamed TsKB-39)

was relocated to a guarded hangar on the territory of plant No. 39 named after V.R. Menzhinsky. The process, as they say, has begun. Already in April, the prototype fighter, which went down in history under the name

BT-11, "internal prison, model 11" (or otherwise "pests to workers"), took off from the takeoff field of the Central Airfield. The tests went extremely smoothly, the biplane, which received the I-5 index, was launched into a series with the M-22 engine and built at factories No. 1, No. 39, No. 21 until the end of 1934 secrecy, the Chekists forbade the "saboteurs" to carry out blowing models and other types of tests in institutions and laboratories outside their jurisdiction). "Motherland" highly appreciated the merits of Grigorovich, Polikarpov and other prisoners of the inner prison: "former pests who repented of their previous deeds" were provided with a special ration in a special canteen,

they were allowed to walk in a special kindergarten, they were allowed to see their wives and children once a week, and, finally, unconvoyed. True, not all and not immediately. For example, in March 1931, HH Polikarpov was replaced by execution with ten years in camps, then in June the OGPU board decided to consider the sentence suspended, and finally, in July, a group of convicted designers, including Polikarpov, was amnestied by a decree of the Central Executive Committee of the USSR. They had to work in the same place, in the Central Design Bureau of Plant No. 39. The Chekists considered the experiment with the "militaryization" of engineering thought successful and, in order to provide the aviation industry with new promising models in the shortest possible time, they decided to concentrate the experimental aircraft building business in their sterile, cologne-

smelling hands. As a result, the merger of TsKB-39 and the TsAGI design department into a single design organization under the general control of vigilant authorities soon followed. The main core of the Central Design Bureau were designers and calculators from the teams of Grigorovich, Polikarpov, the Richard group, as well as replenishment from other factories. The number of designers was increased due to civilian specialists, among whom were A.S. Yakovlev, V.B. Shavrov, A.N. Rafaelianz. The staff of TsKB-39, which

became part of the Technical Department of the Economic Directorate of the OGPU, was about 300 people. The draft designs of the aircraft were made in the General Views Department, after which they were considered and approved by the decisive authority - the Technical Council of the Central Design Bureau. Further drawings were developed by the design department. In parallel, groups and departments worked on aerodynamics, strength, models and layouts, drawing control, weapons, naval aircraft, production preparation, static and flight tests. V.B. Shavrov recalled: "The GPU, which had put a lot of engineering and technical workers of the older generation, decided to take over the experimental construction of aircraft. Like, in this situation, there will be no sabotage. The head of the Central Design Bureau was a two-rhombus hepeust, above it was a three-rhombus, and above this - a four-rhombus. Above - Yagoda, and above Yagoda - Menzhinsky. There were also lower ranks.

The GPU decided to gather at the plant number-39 all those who worked for Richard, Polikarpov, Bartini. And, above all, an extensive work plan for the Central Design Bureau was drawn up. And this plan was based on the following assumption: Tupolev has been building an experimental aircraft for four years, and we will build it in three weeks. We have three hundred people on staff, so we will throw everyone on one task in order to complete it quickly. The Central Design Bureau is a powerful organization that, having leaned heavily on any task, will be able to quickly complete it. The GPU was convinced that this would be the case.

Some of the people in the Central Clinical Hospital were free, and some were "arrested". We, the freemen, were

subordinated to the latter, although they lived in custody and could not even leave the factory. The arrested were our chiefs, and above them - the GPU, which constantly in all intervened."

In the fall of 1931, TsKB-39 was reorganized. Centralized design was replaced by a system of end-to-end teams specialized in aircraft classes. Brigades were formed: fighters (H.H. Polikarpov), reconnaissance aircraft (S.A. Kocherigin), long-range aircraft (P.O. Sukhoi), naval aircraft (I.I. Pogossky, I.V. Chetverikov), propeller-driven vehicles (A.M. Isakson), weapons (A.V. Nadashkevich), propellers (B.J. Alexandrov), wheels and skis (A.I. Mashkevich), standards and normals (P.A. Dudukalov) and others. A little later, a long-range bomber brigade was formed (S.V. Ilyushin) and the Joint Bureau of Standards (OSSA).

There were many objects in the work plan of TsKB-39. However, the hopes for the speedy release of new aircraft did not materialize. Design and construction did not go faster than before, the quality was not higher, and many objects were not started at all. For a year and a half of its existence, the Central Design Bureau produced two types of attack aircraft, a two-seat DI-3 fighter, a TB-5 bomber, an MDR-3 naval reconnaissance aircraft, and a cannon fighter was launched. None of these products of prison creativity was ever adopted. Again V.B. Shavrov:

"The system invented by the GPU has not justified itself. She was completely bankrupt. It turned out that no matter how much you throw people at one thing, it will not go faster from this. If, for example, there are thirty pairs of ribs of different sizes on an airplane, this does not mean that these ribs can be made in two days ... After all, someone usually calculates the wing. Yes, and any aircraft unit is made by a limited number of people, and if their number is increased, then there will be little use from this. The GPU did not understand this simple truth, but at the very first construction of the TSh attack aircraft, this system fully revealed its shortcomings. For six months everything was in a stormy movement: pressure from above, overtime, but no results. The work proceeded exactly as if normal work were being done on this machine."

According to A.S. Yakovleva: "The organization was crowded and stupid, the costs were high, and the return was weak." In

January 1932, the division of TsAGI and the Central Design Bureau took place, and a year later, the head of the Main Directorate of the Aviation Industry, P.I. Baranov signed an order to organize a new Central Design Bureau on the basis of aircraft plant No. 39. S. V. Ilyushin was appointed head of the Central Design Bureau, which has six design teams.

Engine designers, concurrently prominent members of the "Industrial Party", A.A. Bessonov, N.R. Briling, B.S. Stechkin, H.H. Bobrov was also lucky: instead of a trip to Solovki for a period of three years, they were offered to "atone for their guilt before the working people" at the Special Technical Bureau of the OGPU, located in the center of Moscow at plant No. 24. There they created a number of "progressive" engines, which received the names of the most titled executioners - a thousand-horsepower aircraft FED-8 ("Felix Edmundovich Dzerzhinsky"), an engine for the YaGG submarine ("Yagoda Genrikh Grigorievich"), an automobile diesel engine KOJU ("Koba Dzhugashvili") - which were of no use to anyone. By the beginning of the second five-year plan in the Soviet Union, enterprises

reconstructed during the years of the first five-year plan were increasing their production rates; in parallel, new aircraft factories were put into operation. So, in 1931, the laying of plant No. 19 named after Stalin in Perm and plant No. 16 in Voronezh, which were designed for the production of air-cooled engines, and in 1932 - No. 27 in Kazan for the production of liquid-cooled engines and aircraft plant No. -125 in Irkutsk. Plant No. 21 in Gorky began to produce products. In order to meet the growing needs of the Soviet aircraft industry in special design materials made of aluminum and its

alloys, an appropriate metallurgical base was created. For example, in 1933, near Moscow, the construction of plant No. 95 for the production of aluminum pipes, sheets, profiles, etc. was completed. In January

1932, after the abolition of the Supreme Economic Council of the USSR, military factories were transferred to the administrations and trusts of the People's Commissariat of Heavy Industry. At that time, Glavaviaprom included 17 factories, of which seven aircraft were produced. Aircraft factories No. 18 in Voronezh and No. 81 in Tushino were built.

Thus, a base was created for the construction of their own aircraft. At the beginning of 1933, the leadership of the Air Force approved a plan for the development of experimental aircraft construction for 1933-1934, the implementation of which was supposed to lead to a qualitative leap in domestic aviation technology. During these years, it was supposed to create new bombers with ten engines and a twin-engine K-1 at TsAGI, in the GU GVF system - an X-1 bomber with two or three engines, at the Kalinin Design Bureau - a twin-engine VS-2. The task for the new I-13, I-14 fighters was issued by TsAGI, and for the I-15, DI-6 - by the Central Design Bureau. The plan provided for the creation of J1P, TSh-3 reconnaissance and attack aircraft, the U-3 training vehicle, gyroplanes, a helicopter, a jet-powered aircraft, and so on.

Despite the creation of its own industrial base, dependence on the West continued to persist. There was a shortage of qualified personnel, there were no materials necessary for aircraft construction in the required quantities, not all technological and production processes were sufficiently mastered. The lack of domestic engines mastered in production and tested in operation limited the launch of new models of aviation equipment into mass production. The resolution of the Revolutionary Military Council of the USSR noted:

"While almost all foreign air fleets have already switched to high-altitude engines, which dramatically increase the speed of the aircraft at high altitudes, its rate of climb and practical ceiling, our industry has not yet produced a single engine with a supercharger, even in a prototype for state tests ... »

Most of the combat aircraft produced were of poor quality. Soviet engine engineers continued to play "constructor": they thoughtfully dismantled foreign samples and assembled domestic ones from them. In 1930-1935, aircraft engines M-30, M-31, M-32, M-37, M-38, M-41 were tested (any of the six listed aircraft designers were ready to take for the new I-9 and I-10 fighters, but "the engines did not come out by the deadline", and the aircraft were not built), M-44, M-56, M-58 ...

Everything turned out at the world level, even better. Just turn it on and it doesn't work. The only achievement of domestic engine building was the M-11 motor, a thing, no doubt, necessary, but suitable only for devices of the "corn" type.

It became clear that one cannot fully rely on one's own industry, especially when it comes to high technologies and new designs. Therefore, in the spring of 1933, samples of the latest inventions in the field of television, telemechanics and radio were purchased from the German firms Telefunken, Siemens and Fernsee for the needs of the air force: a television set for an aircraft, 6 sets of aircraft transceiver radio stations for a bomber, attack and reconnaissance aviation, 6 sets of radio stations for fighter aircraft, 10 sets of instruments for night flights, 2 sets of airfield and aircraft radio stations. Two delegations went at once to acquire licenses for the production of modern aircraft engines (along with technological documentation, necessary machine and

tool equipment). One, headed by the future chief designer of the Rybinsk plant V.Ya. Klimov bought six aircraft engines from three French firms. Another, under the leadership of the head of CIAM I.I. Poberezhsky, got acquainted in America with Curtis-Wright engines.

The tour in France ended with the acquisition of a license for the Hispano-Suiza 12Ybrs liquid-cooled motor. Its release under the index M-100 was entrusted to plant No. 26. And before that, in Rybinsk they were going to organize the assembly of American Curtis V-1800 Conqueror engines. Considerable sums in hard currency were spent on the reconstruction of the plant, the purchase of a license, tools and fixtures necessary for the development of the "American". Under the "Conqueror" in TsAGI, the I-8 fighter (ANT-13) was already built, which showed a speed of 310 km / h in tests - a record for the USSR. But the Kremlin thought about it and decided: we will still introduce the "Frenchman". And they allocated new appropriations - for machine tools, equipment, special tools, I-8, due to the lack of an engine, "had no continuation." In addition, for the development of plant No. 29, they bought an outstanding engine from the Gnome-Ron company - a two-row 14-cylinder star Mistral-Major 14Kdrs with a take-off power of 850 hp. (An interesting story happened

at the end of 1938. After the occupation of Czechoslovakia by German troops, the French, having assessed the deplorable results of the "appeasement policy", realized it and decided to qualitatively improve their aircraft fleet, and at the same time double its quantity. Three concerns at once received large orders from the Ministry of Aviation for production of the modern MS-406 fighter, but almost immediately it became clear that the engine for it - the Hispano-Suiza 12U - was produced by a single plant that physically could not provide for everyone. In search of a solution to the problem, French officials knocked on the door of the Soviet trade mission and asked to sell at least 200 engines of the "Rybinsk brand." Stalin refused).

As a result of a trip to the United States, the General Directorate of the Aviation Industry acquired 150 radial nine-cylinder Wright Cyclone engines in 1933. R-1820 F-3 rated at 625 hp and weighing 435 kg. For the most part, they were sent to the troops, and several copies were sent to a brand new, equipped with the latest technology, Perm plant, where, through the efforts of the chief engineer A. D. Shvetsov, with the technical assistance of American specialists and on American equipment, the production of the M engine was launched in 1934 -25.

By the end of 1933, a number of new types of aircraft were created in the USSR. The soloists were designers HH Polikarpov and A.N.

Tupolev. The team led by A.N. Tupolev, who had a solid backlog in the form of the TB-1 all-metal bomber and the R-6 multi-purpose aircraft, began designing aircraft with flight weights of 20, 30 and 40 tons. The first in a series of super-heavy machines was the TB-3 (ANT-6). By the way, it was also built by order of Bekauri and at the expense of Ostekhburo, as a "special-purpose aircraft cruiser" capable of carrying mines, anti-submarine bombs, 20-inch radio-controlled torpedoes with a spiral course and transporting loads on an external sling with a total weight of at least 2000 kg. The prototype took off on December 22, 1930. According to the test results of the Air Force Research Institute, the conclusion was made: "The aircraft ... according to its flight data is a completely modern heavy bomber, standing on a par with the best foreign aircraft." ANT-6 with M-17 engines was recommended for serial construction, which was launched in the spring of 1932 at factory #-22, and then at factory #-39.

The bomber was an enlarged version of the TB-1, made of corrugated aluminum mail, with four engines, a flight weight of 17,400 kg and a wingspan of almost 40 m. The maximum speed was 197 km / h, the practical ceiling was 3800 m, the radius of action was 1350 km. In the series, the glider turned out to be 10-12% heavier (respectively, 20 km / h slower), the discrepancy in weight between individual machines reached tens, and sometimes hundreds of kilograms:

"The reasons were mainly the greater thickness of the sheets and pipes due to the inevitable positive tolerances, the addition of equipment and weapons with their fasteners, the addition of structural components related to the needs of operation (brackets, partitions, seats, steps). It was found that many

electrical wires have a section that is much larger than required by the current strength, that the welds are rough, the chassis carts are unreasonably heavy. Experimental aircraft went to the airfield covered with a thin layer of varnish, and in the series their protective coloring was done very roughly with a spray gun, the layer of varnish and paint was thick. On experimental aircraft, everything was made cleaner. In cases of replacing XMA steel with mild steel grade M, the thickness increased accordingly. In addition, the wing mounting brackets were made in place, and the docking bolts were non-standard in length and diameter, poor fitting of the aircraft parts and careless processing of the joints, careless riveting and undertightening of the bolts, cracks and dents in the skin were noted. Each bomber was "individual", and similar parts from one aircraft did not fit another. During operation, water radiators collapsed, pipelines broke and flowed, fuel tanks crawled at the seams, paint swelled and flew around in tatters. In a word, the assembly technology in terms of level clearly did not correspond to the complexity of the advanced design.

The aircraft was equipped with retractable rotating towers in the center section, cluster and beam-type bomb racks for 3000 kg of various bombs weighing up to 1000 kg and radio equipment. Small arms - Tour-6 turret with a single or coaxial machine gun YES in the nose of the fuselage, two wing towers with one YES, rollable Tur-5 turrets behind the wing with one or two YES. Ammunition - 100 discs of 63 rounds. The crew consisted of eight people: the commander of the ship, the second pilot, the navigator-scorer, two air gunners, a senior technician (mechanic), two junior technicians - they are also shooters in the towers. True, on the first serial machines, much of the above equipment was absent: there were not enough

sights, bomb racks, machine guns, and the production of radio stations was just being adjusted. Therefore, the planes were handed over to the troops "conditionally" - under a letter of guarantee from the plant with communication, send everything missing as they arrived. As of January 1, 1933, 144 TB-3s were in service with the Air Force, and another 307 were produced during the year. On the ground, the airship was serviced by 5 mechanics. Refueling only one gas tank with a capacity of 1950 liters took three and a half

hours, and there were four such gas tanks. It was necessary to pour 10–12 liters of water into the cooling system of each motor. For ground handling, it was planned to develop a series of specialized vehicles and trailers, but in practice, auxiliary equipment, as a rule, was absent. For example, "complete" with a bomber, to move the aircraft around the airfield, the Kommunar tractor relied. In real life, this task was solved by 40–50 Red Army men under the guidance of a senior technician. The question of the need to modernize the TB-3 arose almost immediately after testing the prototype. It was planned to replace the M-17 engines with more powerful ones, to strengthen the bomber and defensive small arms. Increased aircraft strength, flight speed and ceiling.

By this time, at the Central Institute of Aviation Motors, the team of A.A. Mikulina brought and introduced into serial production at the Moscow plant No.-24 the first, truly domestic, liquid-cooled engine M-34, created on the basis of the BMW VI. I confess how the M-34 was fundamentally different from the "dad", I still didn't figure it out: the same

dimensions, the same 12 cylinders of the same diameter, the same piston stroke and camber angle. Is it just that in the Mikulin engine: "The cylinder blocks, the upper and lower half of the crankcase were pulled together by pins into a single power circuit, free from the action of tensile forces," and the entire "original" design was "subordinate to the idea of rigidity." At the same time, the dry weight increased from 540 kg to 670 kg, and the rated power from 500 hp. up to 750 hp For the creation of the M-34 AA, Mikulin was awarded a personal car and appointed

chief designer of plant number-24, and the engine was henceforth ordered to be called AM-34.

Tests showed that with the new engines, the bomber had a better rate of climb, but the maximum speed unexpectedly decreased. In September 1933

on the TB-3, geared M-34Rs with new propellers with a diameter of 4.4 m were installed. In addition, the tail section was changed, where another firing point was installed. After testing, the TB-3-4M-34R variant was accepted for serial construction as a standard for 1934. Despite the increased flight weight, the flight characteristics of the aircraft have improved.

Specialists of the Ostekhbyuro stubbornly and unsuccessfully tried to convert some of the machines into telemechanical ones. Only this time, flying up to the target, the pilot of the "air fire-ship" was not thrown out with a parachute, but was transplanted into a fighter suspended under the belly of the TB. Under the projects of an enterprising and punchy Georgian, who before the revolution designed safes and mechanical toys, illiterate "legendary commanders", fascinated by the prospects of telemechanical warfare, in which the enemy will be smashed by red teletanks, radio-controlled airplanes, armored trains, torpedo boats and "wave control" submarines, remotely guided torpedoes and floating mines, self-cocking machine guns, flamethrowers and gas-throwers, knocked out millions of gold rubles even in the most famine-stricken times. The Ostekhburo in Moscow and Leningrad were provided with laboratories and design bureaus with a powerful production and experimental base, workshops, factories, aircraft and hangars, a whole flotilla of ships, their own radio station and their own airfield, a base near Sevastopol; there was an opportunity to involve any specialists in the work. The only pity is that in the war with the Germans, almost none of the brilliant inventions of V.I. Bekauri was not useful, and what was useful had no effect on the outcome of hostilities, except, perhaps, for special communications. Work on the modernization of the TB-3 continued in 1935: new M-34RN engines (with centrifugal superchargers) with an HP 840 power were installed on the aircraft. During the last stage of improvement, the bomber was equipped with boosted M-34FRN engines

(950 hp at an altitude of 5000 m), which made it possible to squeeze 288 km / h, cantilever fuel tanks were introduced, underwing towers were replaced with a "dagger" installation in the fuselage hatch, local aerodynamics were improved made changes in the governing bodies. In this form, serial production was completed in 1936–1937. Everything was taken from the car. For a radical improvement in performance, it was necessary to switch to a new type of aircraft with smooth skin and retractable landing gear. cantilever "the world's first monoplane bomber with engines installed in a row along the span at the wing tip". True, the same Hugo Junker was the first. It was simply forbidden for the Germans to build military vehicles and a cantilever all-metal monoplane with four 800 hp engines installed in a row in a thick wing, which took off in November 1929, served as their passenger aircraft.

TB-3 us called bought a license for the But the Japanese, having Junker G38, turned it into a full-fledged bomber. It weighed 23,000 kg, flew at a speed of 200 km/h, had a flight range of 3,400 km, and a ceiling of 3,700 m. Armament consisted of 11 turret machine guns and 3,000 kg of bombs. Crew of 10 people. During 1931-1934, Mitsubishi supplied the air forces of "militarist" Japan with six Ki-20 heavy bombers. In the peace-loving Soviet country, TB-3s at the peak of production were made one piece a day, and until the spring of 1938, 818 aircraft (each costing a quarter of a million rubles) of various modifications were built. Note that this is the result of the underfulfillment of Stakhanov's plans; in fact, it was planned to have 1440 "air battleships".

The large-scale construction of aircraft of this class required a completely new organization of production, the development of new technological processes and the formation of a detachment of highly qualified engineers and workers. In 1931-1933, the designers of

the scientific and technical department of plant No. 67 developed a line of high-explosive bombs (FAB) of caliber 50, 100, 250, 500, 1000 and 2000 kg. The production of fragmentation OAB-20 and armor-piercing BRAB-220, converted from artillery shells, began.

With the adoption of the TB-3 by the Soviet Air Force, the formation of long-range bomber aviation began. The aircraft

took part in many military affairs, but the most spectacular page in the biography of the TB-3 was the raid of a group of bombers from the Hankou airfield on the island of Kyushu, which took place on May 20, 1938. Six TB-3s with Chinese markings crossed the East China Sea and proudly sailed early in the morning over the ports and naval bases of Sasebo, Nagasaki, Fukuoka and, dropping a million leaflets on the heads of the dumbfounded Japanese, "stigmatizing the militarists who unleashed a war in China", walked away proudly. According to the official version, the squadron was commanded by the hero of the Chinese people, Lieutenant Colonel Xu Huangshen, the world's senior aviation adviser, a thoroughbred crest, commander G. I. Thor. Tokyo's slap in the face resounded throughout the world. At the end of the operation, the Minister of War of the Kuomintang government announced that the planes of the Chinese Air Force were in no way inferior to the Japanese and were able to bomb any targets on any of the islands of the Japanese archipelago. There is an oddity in that the details of this raid are still

unknown. Maybe these were not Chinese planes, maybe not TB-3s, but perhaps they didn't take off from a Chinese airfield ... At that time, it was believed that speed was not so important for a bomber, the

main thing was to take more bombs. Therefore, military comrades demanded from designers the development of bomb carriers with a payload of 25 tons and a wingspan of about 100 m. The development of superheavy aircraft followed the path of increasing size with an unchanged general scheme and an almost constant specific wing load. In 1933, by doubling the area and mass, Tupolev from TB-3 created a six-engine "class 1 battleship" TB-4 (ANT-16), weighing 33 tons. It was supposed to carry up to 10 tons of bombs in various combinations in the bomb bays, fly at an altitude of 7000 m, reach a speed of 250 km / h. The crew consisted of 12 people.

"TB-4 made me forget about character and habits," recalled test pilot P. Stefanovsky. - He was amazing! A man of average height walked freely not only in the fuselage, but also did not bend down in the central part of the wing. The equipment of the monstrous machine resembled a small industrial plant. There was even a real small-sized power plant for autonomous power supply of all aircraft units. The aircraft, "in view of the failure to meet the tactical and technical requirements", into service

not accepted, but the idea was not abandoned.

A further development was the giant airplane ANT-20 "Maxim Gorky". By design, it was a TB-4, which grew even more in size. Its maximum takeoff weight was 53 tons, wingspan - 63 m, fuselage length - 32.5 m. The aircraft was equipped with eight M-34FRN engines with a capacity of 900 hp each. Moreover, two engines were carried into a tandem installation located on top of the fuselage. The crew consisted of 8-10 people, the comfortable passenger cabin was designed for 72 people. Living quarters occupied an area of more than 100 square meters. m. The military version provided for the following weapons: a ball turret with an Oerlikon cannon and a rolling turret for the same cannon; Tur-5, Tur-6 (tail) and dagger installation - with DA machine guns, slats and closing towers with ShKAS machine guns, air bombs. Fortunately, only two examples were built. Almost simultaneously in 1933, the original aircraft designer K.A. Kalinin in Kyiv built the giant aircraft K-7, which was an elliptical

wing of a thick profile with a span of 53 m and an area of 452 sq. m, from which there were two tail booms carrying horizontal and vertical tails with a turning mechanism. In the wing there were rooms for people and cargo. The aircraft was equipped with seven M-34 engines. K-7 was designed as a multi-purpose machine for civil and military use.

The passenger version provided for the placement of 120 seats for passengers in the wing of the "airbus" and their transportation over a distance of up to 5000 km. The military version was a "flying fortress", which had up to 12 firing points - 8 cannons of 20 mm caliber and 8 machine guns. To deliver the shooters to the two tail machine guns, a special electric cart was designed, moving along cables inside the tail boom. The bombing equipment was located in the wing, and to lighten the weight, the bomb rack beams were included in the supporting structure of the wing. The stock of bombs varied depending on the range of use from 10 to 16.6 tons. The use of external tanks guaranteed a flight range of 2400 km with a bomb load of 6 tons. The landing version of the aircraft was designed for 112 paratroopers. The possibility of transporting between the trolley the chassis of a tank weighing 8.4 tons or other equipment dropped by parachute was considered. However, after the disaster with the prototype, the project was mothballed and soon closed. But this is not the limit. Students of the Air Force Academy under the guidance of Professor S.G. Kozlov built a flying wing with an area of 600 square meters. m,

equipped with a "comrade Dziuba unit": six pairs of engines hidden in the wing transmitted rotation to six vertical shafts, which in turn spun six huge propellers mounted on columns. In addition to delivering the bomb cargo to its destination, the Giant, ordered by M.N. Tukhachevsky, was supposed to be used to transport tanks. To load armored vehicles, he ("Giant") had a lowered platform, which was part of the wing. The Tupolev team developed a project for a 12-engine 70-ton aircraft ANT-26 (TB-6) with a crew of 17 people and its transport version ANT-28. This aircraft was supposed to have a wingspan of 95 m, an area of 800 square meters. m, speed - up to 300 km / h. Estimations were made of flying monsters

with a wingspan of up to 200 m. However, the age of low-speed low-altitude corrugated giants has passed. The development of anti-aircraft artillery and fighter aircraft forced the use of heavy-weight air dreadnoughts as transport and passenger aircraft.

The concept of a light fighter was further developed in the USSR, for the first time embodied in the I-5 aircraft.

Until 1933, fighters in all countries were predominantly biplanes or polutoraplans, relatively light in weight and highly maneuverable. Then came the monoplane fighter, which had greater speed but reduced maneuverability compared to the biplane. In this regard, the idea of combat interaction of different types of machines complementing each other was born. High-speed monoplanes were supposed to catch up and intercept the enemy. Less fast, but more maneuverable biplanes - destroy it in air combat. Maneuverable fighters were led into battle in a horizontal plane, hence the smallest turning radius needed to enter the enemy's tail was of great importance. The improvement of maneuverable fighters was carried out by the consistent development of the biplane scheme based on the

improvement of the aerodynamics of the layout, while maintaining a relatively small specific load on the wing, and the use of ever more powerful and high-altitude engines. This ensured an increase in maximum speed, an increase in altitude, rate of climb and ceiling, and with excellent maneuverability

aircraft qualities.

The use of a monoplane scheme with a simultaneous reduction in the wing area and the use of thinner airfoils made it possible to drastically reduce drag. At the same time, retractable landing gear and a smooth, rigid airframe skin were used. The wing area at a given mass was reduced by a factor of 2–2.5. This led to an increase in the specific load on the wing from 70–100 kg/sq. m for heavy monoplanes of the early 1930s up to 140–170 kg / sq. m for high-speed monoplanes. As a result, the total drag decreased by 1.5–2 times, the flight speed increased by 20–30% at

constant engine power and flight altitude. The transition to a high-speed monoplane became possible thanks to the use of new materials and technologies. In aircraft construction, clad duralumin, high-strength steels, light alloys of increased strength, refined wood, etc. began to be widely used. increase in turn execution time. On the other

hand, the power of aircraft engines achieved by 1932-1933 did not give the first high-speed fighters any advantages in vertical speeds and climb speeds over maneuverable biplanes. Therefore, for some time, two types of fighters developed in parallel. In October 1933, flight tests of Polikarpov's new machine began (who managed to interest Yakov Alksnis in it and get a personal team under his command) - a single-column polutoraplan of mixed design TsKB-3 (wings - wooden with linen

sheathing, fuselage - welded from chrome-molybdenum pipes, plumage - duralumin), later called I-15. The upper wing was made according to the "gull" scheme. The innovation not only improved visibility from the cockpit, reduced drag, but also dramatically increased maneuverability. The center section adjacent to the fuselage created such a significant side surface that the aircraft could literally fly "on its side", with a roll of 90 degrees. The idea was also to introduce a retractable landing gear and a closed cockpit canopy, but these ideas could not be put into practice. With the Wright Cyclone engine purchased in the USA, the fighter, weighing 1370 kg, developed a speed of 360 km / h at an altitude of 3000 m. In terms of maneuverability on the horizontal, he had no equal: the turn time - 8.5 seconds - a record short for a fighter. Armament consisted of two to four PV-1 machine guns. True, the lightness of the design was to some extent achieved at the expense of quality, and the customer

expressed doubts about the justification of the gull-type wing, which, in his opinion, made it unacceptably difficult to see during takeoff and aiming, and led to a deterioration in directional stability. But the pilots immediately fell in love with the aircraft precisely for its stability in all modes, ease of piloting, ease of performing maneuvers and excellent takeoff and landing qualities. The review of the famous tester M.JT is indicative. Gallay: "It was a very light, exceptionally well-controlled aircraft, possessing an amazing ability to stay in the air steadily in almost any position." Since 1934, serial construction of the I-15 began at factories No. 39 and No. 1, which was produced in the amount of 384 copies in two years, and then, due to the negative attitude of the Air Force leadership, it was nevertheless discontinued, and already since 1937 began to be withdrawn from service. Maneuverable fighters were built at this time in other countries. In the summer of 1933, the first fighter of actually Nazi Germany took off - the classic He-51 biplane with a BMW-VI engine,

which was a further development of the Heinkel HD-37 fighter (which was produced in the USSR from 1931 to 1934 under the I-7 brand). The aircraft was mass-produced from April 1935, was armed with a pair of synchronous 7.92-mm MG-17 machine guns with 500 rounds per barrel,

and had a number of advantages: its take-off and landing properties, stability, diving qualities could serve as an example. A transceiver radio station was installed on the fighter, which the Soviet industry failed to achieve even ten years later. At the same time, in terms of speed (315 km / h), rate of climb and maneuverability, the Non-51 was noticeably inferior to the I-15.

Almost identical, with the same armament, but more maneuverable and high-altitude machine was the most massive pre-war German fighter Ag-68 with a liquid-cooled Junker Jumo 210E engine, which entered service with the Luftwaffe at the end of the summer of 1936.

In 1933, the Italian Fiat CR-32 biplane made its first flight. It was equipped with an in-line liquid-cooled motor of 600 "horses", which accelerated a two-ton car to 354 km / h. Armament consisted of two 7.69 mm synchronous machine guns. On the modification of the CR-32bis, which rolled off the assembly line in the spring of 1936, two more machine guns were added, mounted on top of the lower wing outside the propeller disk. In the summer of 1937, to the detriment of maximum speed and rate of climb, the fighter's armament was once again strengthened by mounting two Breda-SAFAT machine guns of 12.7 caliber in the forward fuselage.

mm.

At the end of 1933, the HH Polikarpov brigade presented a new initiative project - a low-wing cantilever of mixed design (this time the fuselage was wooden, and the center section frame was metal). It had three fundamental features: an unusually small size, a small margin of longitudinal static stability and a very low takeoff weight. The serial I-16 type 5 fighter with the M-25 engine (the Russified Wright-Cyclone F-3) weighed 1508 kg and at an altitude of 4000 m developed a speed of 445 km / h. It was equipped with an 8 mm thick armored back of the pilot and retractable landing gear. Armament consisted of two ShKAS wing-mounted machine guns with 900 rounds each. And it has not been without its critics. The quartermasters were outraged by the too long takeoff run of the aircraft, which reached 250 m (for the I-15 biplane - 70 m, for the heavy bomber TB-3 - 300 m), which required lengthening of the airfield

runways. Pilots, especially those of average qualification, did not like the high landing speed, complicated piloting technique compared to biplanes - an insufficiently stable aircraft was strict in control, reacted vigorously to the slightest movement of the handle and did not forgive mistakes. However, M.M. Gromov, and M.L. Gallai also noted in his memoirs that the I-16 "was unstable and had poor visibility", "even with not very gross inaccuracies in the pilot's actions, he willingly fell into a tailspin", and they can hardly be called medium-skilled pilots. This instability was deliberately set by the designer, who combined the center of gravity and the aerodynamic focus of the aircraft at one point - all for the sake of achieving, along with high speed, maximum maneuverability in combat. The military also did not like the sliding canopy of the cockpit. The pilots claimed that it restricts freedom of movement and obstructs visibility, and most importantly, it can jam if necessary to leave the plane in a critical situation. As a result, the closing canopy was abolished, and the cockpit became open, which somewhat reduced the flight performance of the machine. Nevertheless, it was the best and most massive pre-war Soviet fighter, which was in production for seven years. The I-15 and I-16 aircraft, which marked the beginning of a qualitatively new stage in the development of Soviet aviation, brought HH Polikarpov the glory of the "king of fighters". These machines were constantly improved, modernized and were in service with the Soviet Air Force until 1943 inclusive.

At the same time, active work was carried out to create cannon and two-seat fighters. The latter, intended to escort heavy bombers, were given a prominent place. With a biplane scheme, there was no significant difference in speed between single and double fighters, in air combat they were considered practically equivalent, and the presence of a second crew member ensured greater versatility in the combat use of the vehicle as a reconnaissance aircraft, light bomber or attack aircraft. However, it was not possible to create anything worthwhile in this class. Projects DI-3 and DI-4 were implemented in single copies. At the end of 1934, the brigade S.A. Kocherigin and V.P. Yatsenko, a two-seat wing-and-a-half plan DI-6 with retractable landing gear and an M-25 engine was produced, developing 370 km / h and armed with three machine guns. The aircraft had good speed and maneuverability.

In general, it was not bad at the time of creation. But it was hardly worth launching it into a series in 1937 at three plants at once, in order to eventually produce 220 moral

outdated machines. With the transition to a monoplane cantilever scheme of a fighter with retractable landing gear, two-seat single-engine vehicles could no longer compete with single-seat ones and lost their significance.

An original solution to the problem was proposed by engineer BC Vakhmistrov. The essence of the idea was that heavy bombers had to carry their "escort", which had an insufficient range due to the small supply of fuel. In the 1930s, Vakhmistrov, under the code name "Link", developed several flying aircraft carriers - fighter carriers - based on the TB-1 and TB-3. In various versions of the "composite aircraft", from two to five single-seat fighters of the I-5, I-Z, I-16 types were mounted on the wings, fuselage and under them. Takeoff and flight took place with the engines of all aircraft running. At the target, the fighters uncoupled and covered the bombers. The connection with the carrier aircraft in the air was also worked out. The most successful was the "Link-6", which appeared in 1934 - TB-3 with two I-16 fighters under the wings. Work on the "Link" was carried out for seven years. It was recognized that the system was quite viable, but in 1938 funding for the theme, nicknamed "Vakhmistrov's Circus", was stopped. The idea of an aircraft coupling was picked up by the engineers of the Third Reich, who created the Mistel system in 1943. Only the Germans had the opposite: the pilot of a fighter mounted on the fuselage of an unmanned bomber full of explosives carried out control in flight, uncoupling and pointing the "air

torpedo" at the target. The system had a range of about 4000 km and was intended to strike at naval bases and large industrial facilities deep behind enemy lines.

The appearance of all-metal bombers with armored crew jobs, tested gas tanks, low-vulnerability to conventional bullets from three-line machine guns, required an increase in the firepower of the hawks. Advanced Soviet military thought promptly and correctly raised the question of installing something larger and more destructive on them, preferably guns. The trouble is that the country did not have its own aircraft guns, and there was nowhere to buy them. The idea arose to arm the fighter with domestic top-secret weapons - dynamo-reactive (recoilless) guns L.V. Kurchevsky, in which the recoil force was compensated by the reaction force of the gases thrown back. Theoretically, this made it possible to use guns of fairly large calibers. The first ground firing from the R-1 reconnaissance aircraft was carried out in April 1930. After the fourth shot, the aircraft was destroyed by the impact of its own weapons. This was followed by an experiment with the P-3 reconnaissance

aircraft, with a similar result. But the gun itself delighted the military. It became clear that for the DRP it was necessary to build a special aircraft: metal, especially strong in the tail area or created according to a special scheme. Work on such a promising machine was carried out by several design bureaus at once. In the summer of 1930, D.P. Grigorovich, who was listed as the unofficial technical director of the Chekist Central Design Bureau. A.N. Sedelnikov, V.L. Korvin, A.V. Nadashkevich, E.I. Majoranov, V.D. Yarovitsky, G.E. Chupilko, S.N. Shishkin. The work was carried out in the deepest secrecy, isolated from other objects, and even the name of the

project was top secret - Z.

The result was a strut-braced low-wing aircraft, in which the front part of the fuselage, together with the propeller unit, was borrowed from the I-5. The tail section, in order to avoid the destructive effects of gases emitted from the nozzle of the gun, was a failure of a duralumin monocoque with a high horizontal tail. The aircraft developed a maximum speed of 259 km / h. The armament consisted of one PV-1 machine gun and two 76-mm Kurchevsky guns suspended under the wing.

The gun had a length of 3.5 m, a rate of fire of about 20 rounds / min, and weighed 75 kg. Ammunition

consisted of seven fragmentation or canister shells with a 22-second remote tube. The shots had nitro fabric cartridge cases with a wooden pallet. When firing, the fabric was supposed to burn out, but in practice it did not burn out completely, but, together with pieces of the pallet, got stuck in the barrel bore, which sometimes led to a rupture of the barrel. Other shortcomings included the small capacity of the magazine, the unsatisfactory operation of the automation, and, ultimately, the vicious design of the gun. Ground tests showed that firing from the DRP produces a "severe physiological effect on the pilot" and leads to the destruction of the aircraft - the design could withstand no more than 400 shots.

Serial production of the I-Z fighter began in 1933. In total, plant No. 39 produced 72 vehicles, most of which were disabled by Kurchevsky guns during the year of operation. In the development of the "Z" type, Grigorovich designed the IP-1 cannon fighter with two APC-4s. 200 copies were produced, however, without miracle weapons. AGOS TsAGI created three aircraft at once for dynamo-

reactive guns. Brigade V.N. Chernysheva in 1931 built an all-metal fighter I-12

(ANT-23) with two air-cooled engines installed in tandem. The aircraft was made according to the original two-beam scheme. Beams made of steel pipes were intended to accommodate lightweight 76 mm APK-5 guns. The refinement of the machine, which flew very mediocrally, and the armament, which turned out to be prone to rupture, lasted almost three years and ended with the closure of the project.

In May 1933, the I-14 (ANT-31) high-speed monoplane fighter, created by P.O. Sukhoi. The aircraft had outstanding flight performance, with the M-25 engine it reached speeds of up to 450 km/h. It was the first to use retractable landing gear, brake wheels and an enclosed canopy. Armament - one PV-1 and two low-powered 37-mm APK-37s with a theoretical rate of fire of about 70 rounds / min and an ammunition load of 25 rounds per gun. However, the new brainchild of Kurchevsky turned out to be incapable of combat: the automation constantly jammed, when tilted or heeled, the "aircraft gun" did not work at all, and at steep dive angles the shells fell out of the barrel. Nevertheless, both the cannon (!) and the aircraft were put into production. Three years later, filled with endless tests, approvals, alterations and elimination of defects, the troops received 18 I-14 fighters armed with classic ShVAK air cannons. AP K-8 with wings and engines "Hispano-Suiza". The gun barrel and exhaust pipe passed through the entire fuselage. Above them were the cockpits of the pilot and gunner. Kurchevsky promised the destruction of air targets with 8-kilogram shrapnel charges at a distance of 8 km with a rate of fire of 25 rounds / min. It has not been tested in practice. The plane was not even transferred

for state tests.

The resilient inventor, who headed the Department of Special Works of the People's Commissariat of Heavy Industry, was pursuing new funding and preparing to equip Soviet aviation with dynamo-reactive cannons and mortars of 152 mm caliber, which were supposed to shoot armadas of enemy bombers from a distance of 13 km! The enticing ideas of Kurchevsky were very impressed by the leading comrades of the highest rank, for example, People's Commissar for Heavy Industry G.K. Ordzhonikidze, Deputy People's Commissar of Defense M.N. Tukhachevsky, Air Force Chief Ya.I. Alksnis. Therefore, Kurchevsky's "firm" was allocated new millions of rubles, and an aviation design bureau was organized at one of the artillery factories, in which designers B.I. Cheranovsky, S.A. Lavochkin, S.N. Lyushin, V.B. Shavrov (in November 1937, after the total shooting of the top command personnel of the Red Army, it was concluded that under Kurchevsky's jet fantasies, "four types of aircraft were spoiled").

As already noted, two leading design organizations, TsKB and KOSOS TsAGI, were in charge of experimental aircraft building in the USSR. But besides them there were

many "special" and "special" offices that created a variety of flying equipment. In the summer of 1930, on

the initiative of P.I. Baranov, by order of the Revolutionary Military Council at TsAGI, the Bureau of Special Designs was organized to study new issues in the field of flying and create devices of new and unusual designs. Then this organization repeatedly changed its name and subordination. The BOC theme included high-altitude cabins, stratospheric balloons, tailless aircraft, rocket-powered aircraft, autogyros. Engineer V.A. was appointed head of the

BOK. Chizhevsky, deputy - HH Kashtanov. At various times, L.I. Sutugin, S.S. Krichevsky, B.I. Cheranovsky, N.I. Kamov. Among the works of the BOC are the gondola of the stratospheric balloon "USSR-1" and a number of experimental aircraft.

In 1933, a special Special Design and Production Bureau of the Red Army Air Force was organized. Military pilot P.I. became his boss. Grokhovsky, who had an education of four classes, gained fame in aviation circles and the patronage of Tukhachevsky and Alksnis with experiments in the field of creating paratroopers. The military, who were constantly concerned about filling the "deep operation theory" with real content, were keenly interested in the possibility of mass airborne assaults and heavy military equipment being dropped behind enemy lines. Grokhovsky developed parachutes, cargo platforms, parachute containers, containers for people and containers for saboteur dogs. One of his ideas was overturning "cradles" suspended on bomb racks, from which a group of paratroopers fell out at once. In another version, the same test subjects were put into a large KPS-17 container, nicknamed "buffet", hitched to the belly of a TB-1 aircraft and dropped with one on all cargo parachutes.

In the autumn of 1934, Divisional Commander Grokhovsky headed the GUAP Experimental Institute for the Work of the Red Army with a branch in Leningrad and decided to take up aircraft at the same time. Pavel Ignatievich himself had no experience in designing aviation equipment, so he used the services of Leningrad engineers and calculators, "usually set the aircraft layout, and other designers were developing it" - B.D. Uralov, V.F. Rentel, V.N. Belyaev, V.F. Bolkhovitinov, S.G. Kozlov, P.A. Ivensen, and in his spare time from his main job. So, Professor C.G. Kozlov, carried out not only Grokhovsky's orders, but also drew his "Giant", and built an invisible plane with Plexiglas skin. Leading aircraft strength specialist Professor V.N. Belyaev worked for almost all the design bureaus that existed at that time, and besides, he designed his own cars.

Among the projects implemented by the Experimental Institute over the three years of its existence, one can name the G-61 - cassettes for transporting people under the lower wings of the R-5 aircraft (cassettes were plywood double boxes that could accommodate 14 people lying down), a two-beam twin-engine "Universal flying wing" G-37, designed to transport airborne troops and various cargoes in a cabin suspended under the fuselage, a transport motor glider G-31 "Yakov Alksnis", an inflatable landing glider and a tailless ram G-39 named "Kukaracha". True, the "bunny" cassettes did not become widespread due to the fact that after the first release, even the most hardened fighters tied up with parachuting; the "flying wing" really flew, but it remained in a single copy; the motor glider evoked among the military associations with a mass grave - 18 saboteurs were placed inside the wing without the possibility of leaving it until the moment of landing; the prototype of a single-seat inflatable glider "buyers" looked with interest, but to finance further work

refused.

As for the Kukarachi, she could not even get off the ground, although V.P. himself got behind the wheel. Chkalov. Not smart. The head of the institute, overflowing with ideas, "set the scheme" for an interceptor aircraft in the form of a flying wing "sharpened" in front, which was supposed to cut the tails of enemy vehicles. The task of "other constructors",

who were developing, was complicated by the requirement to provide Cucarache with the possibility of vertical takeoff and landing. As a result - no takeoff,

no landing. The idea looks just as exotic, reminiscent of illustrations for the novels by J. Verne (fiction in handicraft), but embodied in metal and tested in the air in 1935, with the installation of batteries from three three-inch batteries in the forward fuselage and consoles of thick wings TB-3 without wheels, which were served by loaders who fired a salvo at the command of the ship's commander. It is not clear what they expected to hit, but initially it was supposed to scatter enemy air squadrons with special shrapnel (the idea of installing large-caliber guns in an aircraft thirty years later was realized by the Americans, however, for firing at ground targets in the absence of air defense).

Since 1935, two machines were built at the Experimental Institute at once: the G-26 ultra-fast fighter-interceptor with a declared speed of over 600 km / h, and the G-38 wooden "light cruiser", armed with two cannons and six machine guns (judging by the description - a bomber version G-37 with retractable landing gear). There were also projects of a glider tank carrier and a gliding tank, a single-seat foot-powered submarine and an aircraft carrier submarine, armored parachuting snowmobiles and an armored motorcycle, bomb torpedoes and a helicopter torpedo (!). Yes, there was also a flywheel, a jet airship, a stratoglider suspended from a balloon, and, finally, a "landing train": "Eight gliders, even larger than the G-31 gliders, each for 50 people, are attached to a powerful four-engine aircraft. Thus, one aircraft immediately deploys more than 400 paratroopers behind enemy lines.

In October 1932, the Air Force received a 7.62-mm ShKAS aviation machine gun designed by B.G. Shpitalnyug and I.A. Komaritsky. Rather, as was customary in the Soviet country, a promising machine gun that jammed after a minute of firing was put into service, and then brought to mind for two years; in fact, he began to enter the troops from 1934. The action of the machine gun was based on the use of the energy of the powder gas discharged from the barrel. Power was supplied using a metal link detachable tape. A very high technical rate of fire - 1800 rds / min was achieved due to the short stroke of the moving parts of the automation and the combination of a number of loading operations. The machine gun weighed 10.6 kg. Since he "chewed" ordinary cartridges from a three-ruler, special cartridges of a hardened design were worked out, which had tracer, incendiary and armor-piercing incendiary bullets. ShKAS was produced from 1933 to 1945 in wing, turret and synchronous versions in tens of thousands of copies and was installed on almost all types of Soviet aircraft.

The history is amazing. For example, how did a young specialist born in 1902, who graduated in absentia from the Moscow Mechanical Institute in 1927, in 1930 be able to submit for testing "the world's first special model of machine gun weapons" with a record rate of fire, for which, according to Shpitalny, Hitler himself watched in the evenings and cried? I can believe that, as they write in the canonical biography, Boris from his youth "set out to make a rapid-fire machine gun", it is clear that, according to Komaritsky's memoirs, a unique system could only appear in the USSR and only "thanks to the concerns of the Communist Party and the Soviet government, which are constantly paid special attention to our work. This is just beyond doubt: without "exceptional attention", who would allow them. In addition to the professional gunsmith I.A. Komaritsky, with the help of which "the machine gun scheme was developed", specialists from the design bureau of the Tula Arms Plant I.A. also had a hand in ShKAS. Pastukhov, P.K. Morozenko, A.A. Tronenko, M.A. Mamontov, G.I. Nikitin, K.N. Rudnev, I.P. Somov, I.V. Savin, A.K. Norov, S.A. Yartsev, N.F. Tokarev. Personally, based on the combination of coincidences and "blank spots", I got the impression that B.G. Shpitalny completed

the design of the F.V.

Tokarev with the removal of powder gases and a short stroke of moving parts, which was commissioned by the Artillery Directorate and presented for field tests in October 1930, which did not pass due to the insufficient rate of fire and the complexity of production. About the application for the "first in the world" can be argued. Back in

1929, the Japanese launched the Type 89 "pure aviation system" (a deep modification of the Vickers), the French had their own Darn machine gun with a rate of fire of 1200 rounds / min. The German 7-92-mm MG15 model 1932 with a rate of fire of 1000 rounds / min was also a "purely aviation system", moreover, fully developed. And the MG81, put into service in 1938, gave 1600 rounds / min - a little less than our miracle weapon, but still not enough to make Hitler jealous; but the German one weighed 6.5 kg and was very compact, which is important for aircraft designers. The Tula gunsmiths did not stop there, and by 1933 they had completed successful tests of the 12.7-mm aircraft machine gun of the Shpitalny-Vladimirov system, which pierced armor 20

mm thick from a distance of 300 m. machine guns DK and DShK) was excellent, the high-explosive effect of its explosive bullets was insufficient. Therefore, in 1935-1936, a 20-mm ShVAK aircraft gun of a similar design was created on the basis of a machine gun (by simply increasing the caliber by replacing the barrel without changing the dimensions of the mobile system) with a rate of fire of 700-800 rounds / min. Moreover, among the leadership of the Air Force and "specialists in combat use" for quite a long time, the debate continued on the topic: is an aircraft gun needed at all? At the time of M.N. Tukhachevsky was all in favor of recoilless guns, later, given the increase in speeds and the lower rate of fire than that of a machine gun, they began to doubt the possibility of hitting an enemy aircraft with a projectile.

However, in the future, the ShVAK gun was widely used in Soviet aviation.
and installed on many types of aircraft.

Under this gun, in 1933-1936, the HH Polikarpov team worked on the creation of a promising fighter with a speed of 500 km / h. The existing star-shaped air-cooled engines, due to the large frontal resistance, could not ensure the achievement of such a speed. There were no domestic in-line engines of suitable power, altitude and dimensions. In 1935, HH Polikarpov brought the I-17 fighter for testing on the basis of the 750-horse French Hispano-Suiza Y-12 engine with a ShVAK motor gun installed in the collapse of the cylinder block and four wing machine guns. The cross-sections of the cockpit and engine on the "seventeenth" were almost the same, only the cockpit canopy slightly towered above the fuselage. The machine, which had a tail of normal length and normal centering, turned out to be much more stable than the I-16. And although the cockpit remained open to all winds, the "sharp-nosed" fighter at an altitude of 4400 m demonstrated a speed of 485 km / h. He did not go into the series - he was "shot down" in an unequal battle with the Soviet aviation bureaucracy, which for five years stubbornly ignored the aircraft, and then demanded a combat vehicle capable of squeezing at least 600 km / h. To create such a combat vehicle, a motor with a power of at least 1000 hp was required. And such a motor - a two-row star "Gnome-Ron" -14K - the French imperialists sold to Comrade Stalin. At the plant number-29 under the leadership of A.S. Nazarov, the engine was produced from the end of

1935 under the brand name M-85. The first engines had a lot of imported French and English parts; in terms of power and altitude, after "adaptation", it corresponded to the prototype, although it was inferior to it in terms of resource and had a higher fuel consumption.

Polikarpov abandoned the I-17 and began designing a more promising
cars.

Following the Soviet Union, high-speed fighters appeared in Germany, Italy, France and Great Britain.

In 1935, Willy Messerschmitt, who had previously tested his ideas on sports aircraft, brought the prototype of the most massive German fighter **Bf-109 to the test**. The first modifications were equipped with a 635 hp Jumo-210D engine, developed speeds up to 470 km / h and were armed with two 7.92 mm MG-17 synchronous machine guns. Despite the somewhat angular appearance, the aircraft was distinguished by good aerodynamics, a high degree of thoughtfulness of the scheme, high manufacturability, excellent flight performance - the Messer

was stable in all flight modes and could fly with an abandoned handle. The comfortable cabin had a resettable canopy, which allowed the pilot to quickly leave the aircraft in an emergency. The Breda Ba-65 aircraft with a flight speed of 428 km / h became Italian high-speed fighters. In France, in 1935–1936, two companies immediately began testing fighters: Moran-Saulnier, who created the MS-406 aircraft at a speed of 490 km / h, armed with a 20-mm Hispano-Suiza motor cannon (rate of fire 650 rounds / min , 60 rounds of ammunition in the store) and two 7.5-mm wing-mounted machine guns, and M. Blok - "Block" MV-151S, which

reached speeds of up to 520 km / h and was armed with two 20-mm cannons and two machine guns. Two high-speed fighters appeared at this time in England: the Hawker "Hurricane" Mk. 1 designer Sydney Kampp with a speed of 518 km / h and the brainchild of Reginald Mitchell Supermarine Spitfire Mk. 1 at a speed of 560 km / h - both aircraft were equipped with a 12-cylinder Merlin liquid-cooled engine from Rolls-Royce with an HP 990 power. and carried in the wings eight 7.7-mm Vickers K machine guns (license of the American Browning). Serial production of the above foreign machines was deployed in 1937-1938. Advances in the creation of high-speed monoplanes forced designers to turn to the construction of monoplane fighters and high-speed monoplane bombers. The complex of tactical and technical requirements presented by the leadership of the Soviet Air Force set the task of creating a new type of combat aircraft - a high-speed short-range bomber capable of conducting combat operations in cooperation with ground and naval forces, striking at targets in the operational-tactical rear of the enemy. The following characteristics were set: maximum speed up to 400 km/h, landing speed up to 110 km/h; relatively short range - up to 700 km and a bomb load of up to 500 kg. In February 1934, relying on the design of the experimental multi-seat fighter MI-3, the brigade of A.A. Arkhangelsky under the direction of A.N. Tupoleva began designing the ANT-40 bomber, which was a three-seater cantilever medium wing with two

engines and retractable landing gear in flight. The smooth metal skin of the entire airframe of the aircraft, the absence of protruding parts, the well-chosen

junction of the wing with the fuselage - all contributed to the high aerodynamic qualities of the new machine. The front nose was made transparent with a ~~multi-seat~~ ^{viewpoint} for the movement of machine guns. The aircraft was designed for Wright "Cyclone" star-shaped engines, but then preference was given to Hispano-Suiza 12Y in-line engines - in the domestic version, which received the M-100 index - with a power of 750 hp. The first copy passed state tests in July 1935, in 1936 mass construction was already launched, which continued at factories No. 22 and No. 125 until 1941. The serial SB-2 bomber with M-100A engines (860 hp - due to some increase in boost) developed a speed of 420 km / h at an altitude of 4000 m, had a practical ceiling - 9000 m, range - up to 2150 km. The high speed for the time being made it less vulnerable to the fighters of a potential enemy. Armament: four ShKAS machine guns, two 250 kg bombs or six 100 kg bombs in a bomb bay. Half of the trunks protected the front hemisphere, and the nose twin had very small angles

firing on the horizon. The upper ShKAS, from which, covering the aircraft from behind and above, the gunners fired, was equipped with an unshielded Tur-9 turret, so that the gunner had to protrude into the air stream along with the machine gun. The lower ShKAS was mounted in a pivot hatch installation LU, which also had limited firing and viewing angles. And most importantly, the same shooter had to serve her. However, these shortcomings, like the cramped front cockpit and limited visibility, were perceived as an inevitable, but not too big evil. After all, it was assumed that the gunner-radio operator would not have to shoot at all, but only "do it with a pen" to hopelessly lagging behind enemy fighters. On the modification of 1937 SB-2 bis with M-103 engines (960

hp), sealing of cracks, polishing of wing tips and plumage were introduced for the first time, the aerodynamics of engine nacelles were improved, and a rear shielded turret was installed. The speed reached 450 km / h at an altitude of 4100 m.

SB produced 6830 copies. The secret of A.N. Tupolev, as the chief designer, was that, in addition to undoubted talent, organizational skills and penetrating power, Andrei Nikolaevich did not break away from the realities of the country in which he lived, and, unlike Bartini, Grokhovsky or Myasishchev, was not fond of engineering fantasies. So, recalling Myasishchev, Kerber writes: "I undertake," he said, "to complete any task and I will complete it if industry gives me the necessary components, that is, engines, equipment and metal. But the industry did not submit them, and Myasishchev's experimental design bureaus were liquidated ... The philosophical concept of the patriarch of Soviet aviation

thought A.N. Tupolev was extremely clear: "The country needs planes like black bread. You can offer pralines, cakes,

cakes, but there is no need, there are no ingredients from which they are made. Hence:

a) it is necessary to develop a doctrine for the use of aviation, based on projects of realistically possible

machines; b) on the basis of already mastered technology and production capabilities, create machines suitable for large-scale production; c) if

these samples, according to their data, lag behind Western advertising a little - to hell with them, let's take the quantity ...".

Simultaneously with the creation of the "high-speed bomber", work was underway on the "long-range" bomber. In this direction, since the end of 1931, the brigade of O.P. Sukhoi in the Tupolev team and design team No. 3 at the Central Design Bureau, led by S.V. Ilyushin.

The Tupolev team, on instructions from the government, built the ANT-25 aircraft with a flight range of 13,000 km, which was tested in the air on June 22, 1934. It was an all-metal cantilever monoplane with a large wing aspect ratio and one M-34 engine. Struggling for aerodynamic cleanliness (in tests, the aircraft did not show the estimated speed and range), the designers pulled linen over the corrugated lining, covered it with dope and polished it. The car was named RD - distance record. Records for the glory of the Land of the Soviets were set. In particular, it was on the taxiway that the crew of Valery Chkalov flew to America via the North Pole. But the bomber did not work out of this rather slow-moving machine, although under the DB-1 brand it was even put into mass production - for a very short time. In the army, they were kept as long-range scouts. In military service, a single-engine long-range aircraft had no prospects. The long-range bomber had to have at least two engines and be able to fly if one of them failed.

In 1935, the Sukhoi brigade created the DB-2 aircraft with two M-85 engines with a power of 800 hp each, which, with a bomb load of 1000 kg, provided a flight range of 5000 km. However, by this time, a faster, albeit slightly less distant,

twin-engine bomber TsKB-26, released for flight tests by the brigade S.V. Ilyushin. It outperformed its competitor in maneuverability, rate of climb, and very significantly in terms of maximum bomb load. The Chief Designer liked the car, because the tests had not

yet been completed, and on August 5, 1936, the aircraft had already been put into service. The TsKB-30 variant was adopted by serial construction under the designation DB-36. The flight range of the DB-3 reached 4000 km with a bomb load of 500 kg at a speed

of 320 km/h at an altitude of 4600 m. The maximum speed was 390 km/h, the ceiling was 8400 m. / sq. m). Takeoff weight was 6965 kg. Small arms are weaker than on the SB - three ShKAS machine guns: the bow mount was not paired (besides, it was impossible to shoot from it at high speeds: the oncoming air flow that burst into the open screen flap literally blew the navigator off the seat). The crew consisted of three people, and the gunner-radio operator still served two machine guns - upper and lower. The pilot's seat had a 9 mm armored back. Bomb load - in several versions - from 1000 to 2500 kg. The bombs were placed in the fuselage and external suspension on seven beam bomb racks.

The first DB-3 Soviet Air Force received in May 1937. Due to the high labor intensity and complexity of the design, mass production at factories No. 39, 18 (Voronezh) and 126 (Komsomolsk-on-Amur) was only established in 1938. The machine was constantly refined and improved: they introduced more powerful variants of the "gnome" - M-86 and M-87, installed propellers with adjustable pitch of the VISH-3 brand (license from Hamilton), bomb racks, and improved the design of electrical equipment. DB-3 formed the basis of Soviet long-range aviation, and ~~it was also produced for the legions of the~~ "high-speed" SB and "long-range" DB-3 can be considered the German Do-17 and He-111 bombers. Flight tests of the postal-passenger Dornier, on the

basis of which the Do-17 all-metal bomber was made as part of the assignment of the technical council of the imperial Ministry of

Aviation, began in the fall of 1934. The concept of the "schnelbomber" was similar: the minimum weight of the bomb load and high speed, allowing you to avoid meeting with enemy fighters. The prototype "flying pencil" with an extremely compressed fuselage, spaced tail and two in-line BMW VI engines reached a speed of 435 km / h. The first aircraft began to arrive in parts at the beginning of 1937. A serial three-seat Do-17E, loaded down with military payload and gun emplacements, reached a speed of 354 km/h. Small arms were limited to two MG15 machine guns, and a 500-kg bomb load was placed in two compartments.

Engineers brothers Siegfried and Walter Günther began to create an aircraft with a longer flight range and more powerful weapons based on the passenger Heinkel-70 at the end of 1933. From its predecessor, he adopted the perfect aerodynamics, elliptical wing, retractable landing gear, all-metal construction. A 7.92-mm machine gun and a navigator's workplace were located in the glazed nose, the same MG15 machine guns with a rate of fire of 1100 rounds / min were installed in the upper middle part of the fuselage and the retractable gazebo of the lower gunner. The "payload" was suspended in eight vertical cassettes, each of which contained one bomb with a caliber of up to 250 kg and had its own bomb bay. From the cockpit there was a passage between the cassettes to the rear of the fuselage, where the radio equipment and gunner's posts were located. Serial Non-111B, which appeared at the beginning of 1937, with two Daimler-Benz DB-600 engines with an HP 1000 power. and a takeoff

weight of 8600 kg developed a maximum speed of 370 km / h, cruising - 340 km / h. Practical ceiling - 7000 m, flight range - 1660 km. Similar machines appeared in the USA in 1936 - "Douglas" B-18, in France -

"Block-131" and "Amio-350", Italy - SM.79 "Sparviero". A

distinctive feature of the Italian bomber was the presence of three Alfa Romeo radial engines with an HP 780 power. The vehicle developed a maximum speed of 430 km/h, had a range of 200 km, a ceiling of 7,000 m, carried 1,250 kg of bombs, and had fairly powerful armament: three heavy-caliber 12.7 mm Breda machine guns to protect the front and rear hemispheres, and two 7.7 -mm machine gun in the side windows. The pilots' seats were protected by a 9.5 mm armored back. Crew - five people.

A common drawback of all "high-speed" and "long-range" bombers was a small bomb load and weak defensive weapons, which were sacrificed for the illusory benefits of high speed and record range.

Along with the construction of high-speed medium bombers, Soviet designers were given the task of creating a high-altitude heavy bomber capable of striking targets deep in the rear of the enemy. According to the terms of reference issued by the Air Force Research Institute to the team of A.N. Tupolev in the summer of 1934, the aircraft had to have a range of at least 1,200 km, a speed of 400 km/h, a ceiling of 12,000 m, and a payload of 2,000 kg—that is, to be practically inaccessible to enemy fighters and anti-aircraft guns. The design of the unique was entrusted to the team of V.M. Petlyakova. His scheme continued the TB-3 line - an all-metal four-engine mid-wing, but with a smooth skin, improved aerodynamics, increased to 170 kg / sq. m wing load and retractable landing gear. In general, the whole design was transitional to higher-level aircraft-building technologies. Since there were no suitable high-altitude engines in the country (and there was nowhere to buy - advanced Soviet military thought overtook foreign thought), they found a rather original solution - to add another one - exclusively for the rotation of the centrifugal supercharger, which provided the boost and altitude of the four "main" engines. At the end of 1936, tests began on the prototype ANT-42 (TB-7) with a flight weight of 24 tons. The use of the ACN-2 central pressurization unit with the M-100 engine, hidden in the upper part of the fuselage, made it possible to obtain a flight speed of 403 km / h at altitudes

of 8000–9000 m and reach a ceiling of 10,800 m (The military urged to use individual pressurization on each engine, but no one managed to create a reliable turbocharger in fifteen years. The Americans were able to solve this problem during the construction of their "flying fortress", and we stole their design and copied the tunic into the tunic, having received the domestic TK-19. True, this happened after the war) . The aircraft and engine were finalized for another two years and put into service at the same time. In Germany, there were also attempts to introduce something air-strategic like the Dornier-19 model of 1936, but there were not enough funds, resources and time. As G. Goering admitted: "The Fuhrer does not ask me what type of bombers I have. He wants to know how many there are." Simultaneously with land-based heavy aircraft,

heavy flying boats were built for the Soviet Navy. Initially, they tried to master the production of giant seaplanes based on the TB-3 monoplane scheme. The first was a two-boat all-metal seaplane with six M-34R engines in three tandem installations on the center section - the "sea cruiser" MK-1

(ANT-22). The prototype was ready by August 1934. The takeoff weight of the MK-1 was 43,000 kg with a bomb load of 6,000 kg, the armament was represented by two Oerlikon cannons and eight machine guns in six shielded turrets. "Catamaran" swam perfectly, but it didn't fly well. It turned out to be slow-moving - a maximum speed of 233 km / h, with bombs on an external sling of 205 km / h - and was not accepted for mass production. The second naval aircraft of the TsAGI KOSOS brigade, MDR-4 (ANT-27), was also unsuccessful.

In March 1934, its factory tests began. In April, there was a catastrophe in which the head of the work on naval aviation I.I. Pogossky. The understudy of the aircraft, designated MTB-1 (naval torpedo bomber), was built by the fall. With a takeoff weight of 14,250 kg with three engines of 825 hp each. the plane near the ground had a speed of 233 km / h (without a bomb load), and the ceiling was 5450 m. Since the navy was in dire need of seaplanes, it was decided to launch the car that had not yet taken off the wing in a series before the end of state tests. As a result, one after another, two more aircraft crashed. Having handed over 15 machines, the plant suspended the series, moreover, at that time a completely modern four-engine flying boat ANT-44 appeared, which received the designation MBT-2. The first flight took place on April 19, 1937, but this model did not go into production either. In short, until 1939, Soviet naval aviation

did not receive a single type of seaplane that met the tactical requirements of the customer, with the exception of the single-engine short-range reconnaissance aircraft MBR-2, created by G.M. Beriev back in 1932.

In addition to Moscow and Leningrad, a unique aircraft building school arose in Kharkov, where they built not only "high-speed tractors" and "steam locomotives" with anti-shell armor, but also created aircraft. In 1932, the talented engineer I.G. Neman headed the Department of Aircraft Engineering of the Kharkov Aviation Institute. Iosif Grigorievich radically changed the traditional educational process, striving to combine learning with design practice. Under his leadership, teachers and students of the institute built several KhAI brand vehicles, including a serial two-seat reconnaissance aircraft and a short-range bomber **R-10** (KhAI-5). The all-wooden monoplane with retractable landing gear, put into service in 1936, with the M-25 engine developed a maximum speed of 380 km / h, had a flight range of 1450 km, a ceiling of 7700 m, was armed with three ShKAS machine guns and could carry 300 kg of bombs inside the fuselage. For the first time in domestic aviation, remote control of the hatches of the bomb bay was used. The pilots noted that the R-10 had high speed, ease of control, and stability in flight. The car turned out to be maneuverable and willingly performed all the aerobatics. "I personally made three flights on the P-10 aircraft designed by the engineer Neman," reported Air Force Chief Ya.I. Alksnis - the aircraft is exceptionally light and

easy to fly, quite accessible to pilots of medium and even low qualifications. The performance of the aircraft is relatively high... The aircraft is stable during landing and has no tendency to turn either during the run before takeoff or during the run after landing. The machine passed the spin tests and is withdrawn from it simply and well, without difficulty ... The aircraft, in terms of its combat properties and tactical flight data, deserves to be produced in large quantities for the armament of our troops and reconnaissance aircraft and to speed up its production in every possible way. The aircraft is of wooden construction, and therefore its production is possible not only at the factories of the GUAP, but also at the factories of agricultural machines. I consider it necessary ... to invite the NKOP to present their views on speeding up the production of the aircraft and expanding the production base by introducing it at one or two agricultural machinery plants in parallel with production at plant No. 135.

Until 1940, 528 scouts were produced at the Saratov combine harvester plant.

Introducing the R-10, the Air Force leadership considered it as a transitional model to a more advanced machine. At the beginning of 1936, a competition was announced for the best two-seat reconnaissance monoplane and short-range bomber under the conditional motto "Ivanov". The aircraft was intended to replace the obsolete R-5 reconnaissance biplanes. The design bureaus of HH Polikarpov, P.O. Sukhoi, D.P. Grigorovich, I.G. Nemana, S.V. Ilyushin. At the end of the year, having considered the submitted projects, the people's commissariat issued an order to three applicants. "Stalin's task" for a multi-purpose, mass-produced, easy-to-manufacture and operate aircraft provided that the Sukhoi aircraft would

all-metal, Polikarpov - mixed design, Neman - all-wood. For all projects, a number of units had to be exactly the same and interchangeable: chassis, weapons, power plant (all with the M-62 engine). During the years of the second five-year plan, the USSR continued to increase the capacity of the

aviation industry. In 1937, there were already 57 aircraft factories in the country, which employed 249.1 thousand workers and employees. So, on the outskirts of Novosibirsk, plant No. 153 began to function, which, with reaching full capacity, was supposed to produce 1500 fighters and 1200 bombers per year (In reality, as usual, everything turned out to be more complicated than the builders of the new life planned. Overcoming the specifics of the climate, remoteness from supply bases, short supply of equipment and components, shortage of specialists - there were only seven aviation engineers available - the plant, named after V.P. Chkalov, built 396 I-16 fighters and 503 two-seat training UTIs in 1937-1940 -4. The unheated and non-electric bulk of the bomber building with an area of almost 30 thousand square meters at the beginning of 1941 continued to gape with unglazed windows, despite the efforts of the leadership of Stroytrest No. The enterprise remained the stepson of the aviation industry until the war broke out and the evacuation of factories to the east). The largest aircraft research institutes TsAGI and CIAM have reached the world level in the development of aircraft designs of various types. The scientific and technical thought of Soviet designers did not lag behind foreign achievements. However, the level of implemented developments was still significantly

affected by problems with the organization of production, delays in the implementation of effective technological processes, and the lack of a well-functioning quality control system. The elimination of these shortcomings was facilitated by the study and application of advanced foreign experience.

Head of the UMTS of the Red Army I.P. Belov, in a report to the Defense Commission of the Council of People's Commissars of the USSR "On the state of the US aviation industry" dated September 13, 1936, drew attention to the fact that American aircraft factories are switching to methods of organizing mass mass production:

"Freed from labor-intensive machine-tool and mechanical work, Americans widely use the stamping of various sheet metal parts, press riveters for assembly, various methods welding, anodize parts made of aluminum alloys, which greatly increases their durability ... The organization of production, the technological process and mechanization at Soviet aircraft factories (the most powerful in the world!) lags far behind modern advanced aircraft technology. As a result of this, there is now a dangerous gap between the ability to design an aircraft well and to produce it very poorly and for a long time.

In the same year, a decree was issued on attaching chief designers to mass production, who were supposed to deal directly with the problem of a "dangerous gap". In this regard, most of the brigades of the Central Design Bureau and TsAGI were transformed into design bureaus and transferred to various aircraft manufacturing plants. In the USSR, it was possible to do something there and then, where and when "the party orders." The engineers, who had already gone through the school of increasing the efficiency of their work through "militarization", packed their bags with discipline.

So, the team of S.A. Kocherigina went to the Moscow plant number-1, the team of G.M. Beriev - to the Taganrog plant number-31 - to make flying boats. HH Polikarpov's brigade was divided: part moved to Khimki to plant No. 84, and part to Gorky on

plant number-21, which was the main supplier of the I-16 fighter.

Several young, not yet beaten engineers, taking advantage of the opportunity, turned to M.M. Kaganovich "for clarification on the issue of moving to Gorky:" He answered in a raised tone: "Here we will put you on a barge and lower you down the Volga. What to talk about it? There is a solution ... "If the party says:" It is

necessary! — run ahead of your own screech. In 1933-1938, as in all other years, the tendency to acquire samples of aviation equipment and technologies in Western countries continued. Due to the fact that cooperation with Germany was temporarily curtailed, the Soviet Union purchased the latest aircraft, engines, all kinds of equipment, as well as licenses and technical assistance in the USA, England and France. In one of the letters addressed to Stalin, K.E. Voroshilov wrote: "The USA is now the country of the most advanced aviation technology in the world - both in the field of design and in the field of aviation operation." In April 1936, a resolution of the Council of Labor and Defense "On the

purchase of licenses and technical assistance for American and British aircraft" was adopted. In the same month, a commission consisting of Kharlamov, Zverev, Rogov, Belenkevich, Myasishchev, Gurevich, Sukhoi - about 30 people in total - was sent to England and the United States with the task of studying American aircraft and negotiating with representatives of firms on acquiring licenses and obtaining technical assistance. on the Boeing four-engine bomber, the Consolidated twin-engine naval reconnaissance aircraft, the Glen Martin four-engine naval bomber, the V-11 attack aircraft, the Seversky X-BT fighter, and the Douglas DC-3 twin-engine passenger aircraft.

In March 1937, a STO resolution "On the implementation of technical assistance for American licensed aircraft" was issued. In accordance with this document, the People's Commissariat of the Defense Industry was allocated 15.2 million US dollars to organize the serial construction of the Volty V-11, Glen Martin-156, Douglas, Consolidated, Seversky aircraft.

American aircraft have left a noticeable mark in the domestic aircraft industry. Thus, the Consolidated twin-engine naval reconnaissance aircraft, for the purchase of which and the implementation of technical assistance \$ 2.2 million was allocated, was produced at plant No. 1, transport "Douglas" under the brand name PS-84 at the plant number-84. it was on these machines that the plasma-template production method was mastered. In the aircraft industry, methods of hot stamping, casting, cold pressing and other types of blanking operations have been used, which increase the accuracy and cleanliness of the processing of parts.

"The significance of the Volty aircraft for us," writes V.B. Shavrov, - was to get acquainted with a new type of design and new technology. Experience was gained in the plasma-template method of production, which we started in the first half of 1937.

The latest aviation equipment was also purchased in America. So, in the spring of 1938, the service station decided to purchase 300 of the latest radio compasses, which were installed on Soviet R-1 reconnaissance aircraft, SB, DB-3, TB-7 bombers, and Volty attack aircraft.

In the same years, the USSR purchased some types of French aircraft and engines, the production of which was subsequently established at Soviet factories, as well as individual samples of the latest aviation weapons and equipment. On December 27, 1936, a STO resolution "On organizing the production of the French Renault-Codron aircraft" was issued. To implement the agreement in the spring of 1937, a commission of 28 people was sent to France, mainly specialists from leading aircraft factories, the All-Union Research Institute of Aviation Materials (VIAM) and the "furniture factory" in Khimki. According to an additional decision of the STO, adopted in February 1937, the construction of the French aircraft was entrusted to plant No. 23 in Leningrad, the Moscow plant No. 115 was instructed to produce the lead series, and

furniture factory. In

1936-1937, the Soviet Union purchased radio compasses, photographic equipment and individual models of aircraft weapons from the French firms Carpentier, Materiel Telephonik, Epikmen Aerodrom and some others. The same order also included the latest instruments from individual British and German firms. With Germany, despite the ideological differences, it was possible to find a common language. In 1937, various equipment was purchased - catapults, altimeters, equipment and property for the mechanization of airfield services. Serious changes in aircraft

construction began to occur during the war in Spain. Given the combat experience, the German designers carried out a radical modernization of the entire aircraft fleet. In the spring of 1937, the Arado

company proposed a new modification of the Ag-68 fighter, but the German Air Force headquarters finally decided that the days of biplanes had passed and made a bet on the Messerschmitt, which promised to become a formidable combat vehicle.

Willie didn't

disappoint. At the beginning of 1939, the BM09E-1 modification with a 12-cylinder in-line Daimler-Benz DB-601A engine, which developed a takeoff power of 1175 hp, went into mass production. (one of the distinguishing features of this engine was the system of direct fuel injection into the cylinders, used instead of traditional carburetors), and a take-off weight of 2500 kg. The maximum speed of "Emil" was 570 km / h at an altitude of 4000 m (although the Soviet testers from the Air Force Research Institute got only 547 km / h, but the fact is that this research institute was famous for that - the ability to display the right numbers at the right time for the right people, his measurements had nothing to do with science), flight range - 660 km, ceiling - 10,500 m, climb rate increased significantly. Such indicators put an end to the idea of the invulnerability of "high-speed" and "high-altitude" bombers for fighter aircraft. The armament was also reinforced: the wing machine guns were replaced by two 20 mm Oerlikon MG-FF cannons with a rate of fire of 520 rounds per minute. and an ammunition load of 60 rounds per barrel, and two MG 17 machine guns and 2000 rounds of ammunition were located above the motor.

At the same time, W. Messerschmitt created his own version of the "air cruiser" - the strategic fighter Bf-110, designed to escort bombers deep in enemy territory, long-range patrols, and strike at ground targets. The task was difficult: the strategic fighter had to be on par with enemy interceptors in terms of firepower and flight characteristics, but at the same time carry a fuel supply that would provide a flight range comparable to that of a bomber. As a result of creative searches, the designers of all countries loomed over a rather heavy twin-engine monoplane with obviously reduced maneuverability. The prototype aircraft took to the air in May 1936 and already at the beginning of the tests exceeded the speed of 500 km / h. Serial production was

launched in the spring of 1938. A three-seat fighter Bf-110B, weighing 5300 kg, with full armament and Jumo-210 engines, developed at a maximum of 453 km / h. The range was 1700 km, the ceiling was 8000 m. A whole battery was installed in the forward fuselage: four MG 17 machine guns in the upper part and two 20-mm cannons at the bottom. Another machine gun on a movable turret covered the rear upper hemisphere.

With the Daimler-Benz DB-601 engines installed in 1939, the aircraft squeezed 485 km / h and climbed 10,000 m, the flight range reached 1,100 km. Of course, the "one hundred and tenth" still lacked maneuverability, but it was the best in its class.

During this period, the He-111 bomber underwent significant design changes. The appearance of the aircraft has changed. The places of the pilot and navigator were connected in the forward glazed cockpit. The arrow from the rear hemisphere was protected by an 8-mm armored partition. Instead of a retractable lower gazebo, a streamlined

the gondola in which lay the lower gunner. The number and caliber of machine gun barrels have grown. The bomb load remained the same - up to 2000 kg. The wing of the aircraft, in order to simplify its production, instead of elliptical in plan, acquired straight forms. With the Jumo-211A engine, the bomber developed a maximum speed of 418 km / h, had a flight range of 1,500 km, and a practical ceiling of 8,000 m. Further improvement of the machine went along the line of strengthening the protection of the crew and small arms.

In 1938, the production of the Do-17M bomber began with new engines - radial Vgasho 323, due to which the speed increased to 435 km / h - and a third machine gun in the cabin floor. The bomb load was doubled and usually consisted of twenty 50-kg bombs. The events in Spain showed the

increased role of aviation in direct support of ground forces. However, the increased flight speed of horizontal bombers also had negative consequences: the dispersion of bombs increased, the effectiveness of bombing decreased, despite the appearance of special sights. As E. Heinkel wrote: "If a certain accuracy of a shot was achieved in artillery, then in aviation, dropping bombs was somewhat reminiscent of firing from a machine gun. It is hardly worth proving to anyone that a bomb is an expensive thing. There is a need to have a battlefield aircraft. And the Germans had it. As a matter of fact, the world's first armored attack aircraft designed to attack ground targets was created by the same Junker at the end of the First World War. And the progenitor of dive bombers is the American biplane Curtiss H-81 Hawk.

In November 1933, the famous German ace Ernst Udet privately (at the expense of the Air Ministry) purchased two Curtiss dive bombers in the United States and demonstrated them to Goering. In February 1934, the technical department of the Ministry of Aviation issued conditions for the development of a single-seat aircraft that could be used as a fighter and as a dive bomber. The competition was won by the young company Henschel, which had previously been engaged in the production of steam locomotives and trucks. The aircraft, designated Hs-123, was an all-metal single-column polutoraplan, with non-retractable landing gear, an open cockpit, equipped with a radial air-cooled BMW 132D engine (licensed version of the American Pratt Whitney GR-1690) with an HP 880 power. The maximum speed is 340 km/h. Armament - two machine guns MG 17, firing through the propeller. The Hs-123 could carry one 250-kg bomb under the fuselage, or four 50-kg bombs on the lower wing holders, and, even without air brakes, dive at an angle of up to 80 degrees. The aircraft was mass-produced from the spring of 1936 to November 1938 with a total circulation of 260 copies. The Henschels, nominally listed as fighters, proved to be excellent in Spain as an aircraft for direct support of ground troops, demonstrating high survivability, a successful combination of speed and maneuverability, and the ability to take off from any lawn. Diving at the target almost vertically, they were practically invulnerable to anti-aircraft guns and remained in combat formation until the middle of 1944, until they were completely knocked out. However, already at the time of adoption, this aircraft was considered an intermediate link in the creation of a more advanced dive bomber with better performance and capable of carrying a large bomb load.

The development of such a machine, the chief designer of the company "Junker" German Polman has been engaged since 1933. Therefore, when in January 1935 the Ministry of Aviation determined the official technical specifications for a new diving combat aircraft and announced a competition for the best project, the first three prototypes were already being built at the Junker factory. The requirements of the ministry almost ideally suited the almost ready-made two-seat single-engine machine, which made its first flight on September 17 of the same year and, having defeated the aircraft of Arado (Ag-81), Blom and Foss (Na.137), "Heinkel" (Not-118), was put into service. Of course, in the choice played

the role and personal sympathies of Udet, who was appointed head of the Technical Department, and the skill of the chief pilot of the Junkers, shown in comparative tests in Rechlin. As E. Heinkel later wrote, the pilot squeezed everything that she could give out of the car and "each time, making an attack, he literally put his plane on his head", confidently exiting a dive into horizontal flight: "Bombing flights were accompanied by such a monstrous roar, that goosebumps ran through my body. The howl of these infernal machines, and they deserve such a comparison, was indescribable. In his aircraft, designated Ju-87, G. Polman managed

to combine good handling, excellent visibility and sufficient structural strength. Not wanting to weaken the wing with cutouts for the landing gear niches, he made the struts non-retractable, and to reduce aerodynamic drag he enclosed them in large fairings. To reduce the height of the struts, a reverse gull wing was used. Slotted ailerons and flaps contributed to good maneuverability and controllability. A distinctive feature of the aircraft was its ability to dive vertically to the ground, providing the highest accuracy of bombing. In order for the "thing" not to go beyond the speed limits, air brakes were installed on it in the form of two underwing deflectable plates. The most important innovation was the automatic dive, which ensured the exit of the car from the dive after dropping the bomb with a constant overload, while the efforts on the handle did not exceed the standard for horizontal flight. A special electromechanism rearranged the trimmer of the elevator. Subsequently, an altimeter was included in the dive automaton circuit, which determined the start of the withdrawal, even if the bomb was not dropped. If necessary, the pilot could "push" the automation with an effort on the handle and

bring the matter to an end.

The first serial machines, produced in early 1937, were equipped with an air-cooled Jumo-210D engine, had a take-off weight of 3390 kg and a maximum speed of 318 km/h. Small arms consisted of two 7.92-mm machine guns: one was located in the right wing, the second - in the cockpit of the gunner-radio operator who covered the tail of the aircraft. The normal bomb load, as a rule, did not exceed 250 kg. The bomb was suspended under the fuselage, and so that it would not catch the propeller, a special frame-type device took it to a safe distance. Due to the clearly insufficient engine power - 680 hp. - The "thing" could hardly lift a 500 kg bomb, while the shooter had to stay on the ground. However, this disadvantage was compensated by the fact that an experienced pilot could lay out a bomb load in a circle with a radius of no more than 15 m. When the German designers got the Jumo-211A engine with 1200 "horses", the result was an aircraft that was qualitatively superior to its predecessor.

The bomb load of 500 kg became normal. It could be placed not only under the fuselage, but also on four underwing bomb racks (4 bombs of 50 kg caliber). Instead of one MG 17 wing machine gun, two were installed. With a takeoff weight of 4300 kg, the speed increased to 380 km / h, up to 8000 m - the ceiling. The flight range was 780 km. After a successful debut, the order for the production of "pieces" was increased from 396 to 964 copies. From the summer of 1938, three plants were engaged in the production of the Ju-87B modification in Germany.

Until the end of August 1939, the Luftwaffe received approximately 460 "pieces". Very soon, the whole of Europe heard the howl of Polman's "hellish machines". Another very successful Junkers machine was a front-line bomber.

Ju-88. Initially, it was planned to make another "schnellbomber" with virtually no defensive weapons, with a maximum speed of 500 km / h and a bomb load of up to 800 kg. But by this time, the leadership of the Luftwaffe had come to the conclusion that maximum speed was not a priority for a bomber, its main function was to take on board the maximum possible amount of payload and deliver it exactly to the target. Already during the tests of the prototype, which took place in September 1937

year, the manual of the requirements for the aircraft was changed, focusing on the possibility of dive bombing and strengthening weapons. In the end, after four years of work, the best bomber of the beginning of World War II and the most massive twin-engine combat aircraft produced from 1939 to 1945 in the amount of more than 15,000 copies (including the fighter version) were launched into the series.

The Ju-88A-1 bomber of the 1939 model with Jumo-211 engines developed a maximum speed of "only" 450 km / h. Take-off weight - 10,400 kg, flight range - 1700 km, ceiling - 9800 m. Four crew members - pilot, bombardier, flight engineer, gunner-radio operator - were placed back to back in one cockpit. Armament - three 7.92-mm machine guns MG 15: one in front and two in the rear hemisphere. Thus, the flight parameters of the aircraft did not represent anything particularly outstanding. The high efficiency of the "eighty-eighth", as a front-line bomber, was provided by its other abilities: the remarkable accuracy of bombing and the power of a bomb salvo. Inside the two bomb bays, 28 high-explosive fragmentation bombs of 50 kg caliber could fit. Plus, four "hundreds" were usually hung on underwing holders, which provided a bomb load of 1800 kg. For flying over short distances, four 250-kg bombs or two 500-kg bombs were taken under the wing, which brought the weight of the "payload" to 2400 kg. On the plane, all operations related to the entry and exit from a dive were automated, when climbing, the afterburner mode of operation of the motors was turned on and off, after reaching a certain height, the second speed of the supercharger was automatically turned on. True, only bombs mounted on external holders could be dropped from a steep dive. The survivability of the aircraft was ensured by tested gas tanks, duplication of oil-gas systems and control wiring, a year later an armored back for the pilot was installed, the shooters were protected by side and lower armor plates 4-9 mm thick. German generals considered air reconnaissance and artillery spotters to be an obligatory link in the chain of interaction between aviation and ground forces. On

their order, the Henschel company created the Hs-126 light two-seat parasol monoplane, which made a significant contribution to the Wehrmacht's "lightning victories". He is also well known to Soviet soldiers under the nickname "crutch". Since 1938, 780 copies have been produced. In 1940, the famous "frame" - Fw-189 - a two-beam tactical reconnaissance aircraft, maneuverable, incredibly tenacious, repeatedly cursed by soldiers of all fronts, began to replace the Henschel. At the same time, the failed, retired Ju-86 bomber was redesigned and repurposed into an excellent strategic reconnaissance aircraft. Climbing to a height of 14,000 meters, he freely plied the skies until 1943. In the USSR, they never bothered to create anything of the kind.

With this "range" of a total of 4,093 aircraft (including 1,542 bombers), Germany plunged into a world war - with the benevolent neutrality of Comrade Stalin. So benevolent that any Soviet person who publicly called Genosse Hitler a "bad person" could be guaranteed to "dry crackers".

In France, there were 3335 combat aircraft, in England - 1992, in North American States - 1576.

In the Land of Soviets on October 1, 1939, 12,677 combat aircraft stood guard over the "conquests of

October". Lessons were also

learned in Moscow. Influenced by the first news from Spain about the success of the I-15 HH fighter, Polikarpov was instructed to modernize "taking into account combat experience" and resume production of the biplane. The modernization consisted in the fact that the designer, under pressure from the military, removed the "seagull" and made the upper wing straight (although, according to the results of blowing in the wind tunnel, TsAGI issued a verdict that the stability of the path with the "gull" type wing only increases with increasing speed). Later, Nikolai Nik

wrote to the head of the GUAP M.M. Kaganovich: "All our numerous attempts, both by blowing and by direct demonstrations in flight, to indicate that the I-15 is highly maneuverable and sensitive to aircraft control, were not crowned with success at that time. For I, as a designer, could not provide evidence of the stability of the path in the form of records of aircraft vibrations with an inertialess device due to the absence of such devices in the USSR. A boosted M-25V engine (750 hp) was supplied,

the wing area was increased, and the structure was strengthened. Armament consisted of four PV-1 synchronous machine guns and 150 kg bombs. The weight of the empty aircraft has increased by 350 kg. The flight qualities of the heavier and less maneuverable I-15 bis (I-152) fighter turned out to be lower than that of the I-15, especially the rate of climb and the ceiling. The maximum speed was 370 km / h at an altitude of 3000 m - instead of the expected 430 km / h. At the very end of 1937, at the plant No. 1 named after Aviakhim, this, frankly, unpromising aircraft was put into production in a large series - 2408 copies. Moreover, at the same time it was decided to build a new modification. At the beginning of 1939, the production of the **I-153 biplane fighter began**, which

was a direct development of the I-15 aircraft with an M-62 engine and an AB-1 variable-pitch propeller. The designer again returned to the "seagull" scheme. On the plane, which weighed 1765 kg and developed a speed of 425 km / h at an altitude of 5000 m, a pilot armored back and a retractable landing gear appeared. Armament - four synchronous ShKAS machine guns. It is traditionally stated that in this design the biplane scheme was brought to perfection, "the flight qualities of the machine can be called outstanding." The decision to rivet this apparatus during the two pre-war years in the amount of 3437 pieces can be called just as outstanding! However, on the one hand, there were no new fighters available, on the other hand, "it was necessary to replenish the fleet of fighter aircraft, and the factories had to be loaded." The last 64 "Seagulls" rolled out of the workshops of plant No. 1 at the beginning of 1941.

All these years, the HH Polikarpov team has been improving the I-16 aircraft, its flight data, armament, and propulsion system. Type 10 received the M-25A engine with an HP 730 power. and additionally two synchronous machine guns ShKAS. In 1938, the M-25V engine was installed on the type 17, and the wing machine guns were replaced by two ShVAK cannons, and a suspension of up to 200 kg of bombs was also provided. Type 18 was equipped with an M-62 engine with a two-speed supercharger with a power of 920 hp. s, developed a speed of 463 km / h and was armed with four machine guns. Type 24 with M-63, launched in 1939, had a takeoff weight of 1900 kg. The specific load on the wing increased from 92 to 131.5 kg/sq. m, the maximum speed reached 489 km / h, and landing - 125 km / h. Armament consisted of two ShVAK cannons and two ShKAS machine guns. The last, 29th modification, in addition to two synchronous ShKASs, carried the latest 12.7-mm Berezin machine gun in the lower part of the fuselage, which fired 800 bullets per minute; up to 200 kg of bombs or six RS-82 rockets were placed under the wings. However, many of these

figures are relative. Aircraft of the same type could be very, very different from each other in terms of weight, size, engine power and flight characteristics. Firstly, before the war in the USSR there were no unified state standards

and a unified system of design documentation. Each plant had its own norms, standards and technological approvals. Therefore, when transferring aircraft production from one factory to another, all the drawings had to be done again. In addition, local craftsmen tried in every possible way to simplify and "improve" the production process. As a result, each plant made its own aircraft. For example, the I-15 of plant No. 1 weighed 20 kg more than the exact same I-15 of plant No. 39.

Secondly, the production car invariably turned out worse than the reference copy, not speaking of a significant percentage of defects in Soviet products.

Thirdly, the results obtained during the tests depended on the degree of interest of the party conducting the tests, the methodology used and the instrumentation - extremely primitive, and finally, on the degree of sobriety of the pilot and measurer.

Known is a letter from Nikolai Polikarpov to Yakov Smushkevich about "miracles" with measurements of the speed of the I-16 fighter with the M-25A engine. According to the results of tests at plant No. 39, the aircraft at an altitude of 3000 m had a speed of 456 km / h, and at plant No. 21 - already 470 km / h. In the Air Force Research Institute, exactly the same fighter in September 1936 developed 505 km / h at high speeds, and a year later the same research institute reported that the maximum speed of the machine at an altitude of 3000 m was 445 km / h, "i.e. That is, 25 km/h less than the measurements of plant No.-21 and 60 km/h. less than their

measurements from 1936. "It is also interesting to note," Polikarpov wrote, "that a month and a half before that we received an official report on the two-seat I-16M25A (UTI-4), where its speed with the screw $D = 2.9 \text{ m}$ $V_{3000} = 474 \text{ km / h}$., which is 29 km/h more than a single seater, which is incredible." In total, factories No.

21, 39 and 153 until the beginning of 1941 produced 9450

"donkeys".

Head of the 1st Main Directorate of the NKOP and part-time chief designer of plant No. 39 S.V. Ilyushin in 1938 began a deep modification of the DB-36 bomber. More powerful engines were installed on it, weapons were strengthened, the problem of fuel placement was solved in a new way, the contours of the fuselage were somewhat changed and the airframe design was radically changed in accordance with the principles of the plasma-template production method mastered during the introduction of the American Douglas. An important result of using this technology was a sharp decrease in the labor intensity of the process: if earlier it took more than 30 thousand hours to build one bomber, then after modernization - 14,300. takeoff power of 1100 hp, and VISH-23 controllable pitch propellers. The aircraft received new navigation equipment and the AVP-12 autopilot, which ensured course, roll and pitch stabilization. It was planned to replace the ShKAS machine guns with UltraShKAS of the same rifle caliber, but with a crazy rate of fire - about 3000 rounds / min. As a result, it was supposed to get a practically new bomber with excellent characteristics: maximum speed - about 500 km / h at an altitude of 7000 m, practical ceiling - 11,000 m, range - 4000 km. In addition, in February 1938 S.V. Ilyushin came up with the initiative to build a special attack aircraft, "operating at low altitude and having powerful offensive and defensive weapons and with an engine that

develops maximum power near the ground." Addressing the members of the Politburo, the designer wrote:

"Our types of attack aircraft, both built in series - VULTI, KhAI (construction Neman), and experienced ... have great vulnerability, since not a single vital part of these aircraft: crew, engine, oil system, gas system and bombs - is not protected. This can greatly reduce the offensive capabilities of our attack aircraft.

Therefore, today there is a need to create an armored attack aircraft, in other words, a flying tank, in which all vital parts are reserved.

Conscious of the need for such an aircraft, I worked for several months to solve this difficult problem, the result of which was the project of an armored attack aircraft. For the implementation of this outstanding

aircraft, which will invariably increase the offensive capabilities of our attack aircraft, making it

capable of inflicting crushing blows on the enemy without losses or with very small losses on her part, I ask you to relieve me of the post of Head of the Main Directorate - instructing me to release the aircraft for state tests in November 1938.

The task of creating an armored attack aircraft is extremely difficult and involves great technical risk, but I take on the task with enthusiasm and full confidence for success.

Iosif Vissarionovich granted the request, and Sergei Vladimirovich, relieved of his high administrative position, began designing the machine, which received the code name TsKB-55 (BSh-2). Undertaking to make an "outstanding aircraft", S.V. Ilyushin did not start from scratch.

The first attack aircraft, which embodied the concept of a "winged tank", ironing enemy positions at low altitude, was again released by Junkers. It is understandable, besides him, no one knew how to make all-metal aircraft at that time. Born in 1917, the Junker D-1 polutoraplan had an armored fuselage that protected the engine, fuel tanks and crew from ground fire. The British somewhat improved this scheme by creating the Salamander aircraft, on which the armored box not only protected from bullets, but also perceived aerodynamic loads from the wing. But in general, the idea of armored aircraft in the West has not received development.

Proletarian military experts insistently demanded such a combat vehicle, calling it the "Fighter". By their order, the Tupolev Design Bureau developed preliminary designs for heavy attack aircraft ANT-17 and ANT-18 based on the twin-engine "cruiser" R-6. It was supposed to arm the aircraft with dynamo-reactive guns and hang up to 1000 kg of armor on it. The projects were not implemented. With great enthusiasm

in the spring of 1930, the designers assembled in the Central Design Bureau organized by the Chekists set to work. Three types of attack aircraft were built here at the same time: light, heavy and special-purpose attack aircraft. All of them represented a copy of the R-5 scout with various armor and armament options.

The light attack aircraft LSH with hinged armor turned into a heavy TSh-1 during the construction process. The latter had a mixed design, the front of the fuselage was an armored box, which housed the engine with radiators and tanks, the cockpit and gunner. The tail section was attached to it, welded from steel pipes and covered with a cloth. The armored box, which weighed 520 kg (the take-off weight of the aircraft reached 3300 kg), was assembled from flat and cylindrically bent pieces 4–6 mm thick. At the same time, welding, bolting and riveting were tried. It was not possible to master welding of armor, rivet seams did not take root due to the large number of necessary holes - they settled on bolts with ordinary nuts. The armament of the TSh-1 consisted of two PV-1 synchronous machine guns, two Degtyarevs on a turret, two designed by A.V. Nadashkevich, batteries of four PVs installed under the lower wings, as well as a "grenade box" - a box for 300 hand grenades. The TSh-2 differed only in that it was decided to hide the batteries in the wings, which made it possible to somewhat improve the aircraft's flight qualities. The speed reached 213 km / h, the ceiling was 4220 m. The aircraft was put into production and then, at the end of 1932, it was stopped, having made ten copies. The special-purpose attack aircraft, tested in the same year, was armored only from below and had folding wings. It was not accepted into service.

By the spring of 1934, the brigade S.A. Kocherigin, a heavy monoplane attack aircraft TSh-3 was built with an M-34F engine, fixed landing gear, two ShKAS batteries of five machine guns each, with a speed of 250 km / h. But he remained in one copy. The large mass of armor with insufficient engine power was the reason that for a long time the problem of the attack aircraft could not be satisfactorily solved. No one was able to create a machine that would combine powerful weapons, high speed, reliable armor protection, acceptable in terms of flight performance and operational qualities.

Therefore, serial R-5 (seven machine guns) and DI-6 (five machine guns) were converted into attack aircraft by increasing the number of barrels. They didn't have armor. A real opportunity to create a truly armored attack aircraft presented itself when in the laboratories of the All-Union Scientific and Technical Institute of Aviation Materials (VIAM) under the leadership of S.T. Kishkin and N.M. Sklyarov, AB-1 armor was obtained, suitable for the manufacture of complexly stamped biconvex hulls. S.V. Ilyushin sketched out a draft of a two-seat single-engine

aircraft, the nose of which was a 5 mm thick armored box included in the power circuit of the fuselage. She protected the engine, oil coolers, gas tanks, the pilot and the navigator-gunner. In addition, inside the hull, additional protection was provided for the vital parts of the vehicle with the help of armored capsules, the crew - with special armored shields. The designer promised that with the AM-34FRN engine, the attack aircraft would have a maximum ground speed of 400 km / h, a flight range of up to 800 km, a ceiling of 8000 m, carry 8 machine guns on board and up to 300 kg of bombs on an external sling. "Enthusiasm and complete confidence in the success", shown by Sergei Vladimirovich, can be appreciated, given that

the AM-34FRN engine, developed for the TB-7 bomber, was not even theoretically suitable for the "flying tank" (and in general was soon discontinued), there were simply no powerful low-altitude motors, and the technology for manufacturing armor plates with a double curvature surface had yet to be created! As a consequence, a year after the landmark letter, the "hard problem" remained

unresolved: BSh-2 existed only in sketches and layouts.

The country's defense capability was strengthened in other areas as well. Comrade Stalin, being a real Marxist, knew that the Soviet Organism was infected with gangrene from birth and required permanent cleansing and blood transfusion. The birthmarks of capitalism sprouted as metastases of counter-revolution.

Immediately after the historic February-March Plenum of the Central Committee, the native CPSU (b) in 1937, People's Commissar for the Defense Industry M.S. Rukhimovich was instructed to prepare an action plan "to expose and prevent sabotage and espionage" in his "eparchy." Rukhimovich did not understand the task, confining himself to a formal reply that the former leadership of the people's commissariat screwed up. Thus, he showed his enemy essence and, together with his closest assistants, went to be shot.

Then the investigative teams of the NKVD went through the military factories, scientific and experimental design organizations with a frequent comb. The picture was horrifying: directors, chief engineers, technologists, designers, shop managers, technicians and even locksmiths were among the personnel of all intelligence agencies in the world.

Once forgiven by the most humane authorities, "saboteurs", instead of sincerely repenting and "disarming before the Party", mutated into inveterate "enemies of the people" and hundreds, yes there hundreds, thousands, were recruited into spies and signed up as terrorists. Only at the plant number-24

named after M.V. Frunze, and only in the second half of 1937, employees of the Moscow Regional Directorate of the NKVD identified a THOUSAND (!) "anti-Soviet socially alien and suspicious of espionage and sabotage" elements. The plant made aircraft engines designed by A.A. Mikulin and with them constantly had problems:

"The weak points of the forced AM-34FRN engine turned out to be carburetors, an ignition system and a drive centrifugal supercharger (PTsN), which at high altitude "ate" too much of the engine's power." Yes, and how could it be otherwise, if the plant was "opened and liquidated 5 espionage and sabotage groups with a total of 50 people, of which:

1. Anti-Soviet Right-Trotskyist group, consisting of a former director

plant Maryamov and technical director Kolosov.

2. Spy and sabotage group of Japanese intelligence consisting of 9 people. 3. Spy-sabotage group of German intelligence consisting of 13

Human.

4. Spy and sabotage group of French intelligence consisting of 4

Human.

5. Terrorist and espionage and sabotage group of the Latvian intelligence, consisting of 15 people, headed by the former deputy director of the plant Gelman. Also arrested was the head of the technical sector of the OTK of the plant, the Trotskyist Tarakhuntov, in whose case an investigation is underway with the expectation of opening the work organized by the Trotskyists at the plant.

With such a contamination of the plant with "enemy gangs", it remains to be surprised that it has not yet taken off into the air, but continued to give engines for bombers. Apparently, saboteurs from different states, fearing for their own lives, interfered with each other.

At the Perm Aircraft Engine Plant No.-19, the members of the "anti-Soviet terrorist subversive organization" turned out to be the chief dispatcher Basin, the chief metallurgist Shumin, the chief engineer Briskin, and the "organization" was headed by the technical director

A.D. Shvetsov. In Zaporizhzhya, at plant number 29, five chief designers were replaced in three years. They selflessly harmed at the instigation of director S.A. Alexandrov, who had a task from French intelligence to prevent the introduction of M-87 engines into the series. In particular, AC Nazarov, who launched the production of the domestic Mistral-Major, was transferred to Voronezh with a demotion and arrested there. And

the director of plant No. 39 S. Margolin, together with the chief engineer Novoselsky and party organizer A.O. Kalniņš turned out to be "bastards". And the director of the plant of experimental designs No.-156 D.N. Osipov - too (like the chief engineer of the plant Novoselsky), and the next director M.A. Usachev, and director V.A. Kuchur. And also E.I. Miroshnikov - director of the Gorky aircraft plant No. 21, K.D. Kuznetsov - director of plant No.-124 (with chief engineer Yu.M. Mogilevich), S.G. Khorkov is the director of Factory No. 207, recruited by Italian General Umberto Nobile and derailing an ambitious military airship program. At the Kharkov plant No.-135, the director Vasilyev and the chief

engineer N.E. Shvarev. The head of the 5th department of the GUGB of the NKVD of the USSR, Nikolaev sent a special report addressed to the marshal of the punitive troops N.I. Yezhov:

"The failure to timely eliminate the defects on the R-10 aircraft identified by the test, and the failure to ensure the production of these aircraft, fully fits into those forms of sabotage that were widely practiced by pests from the Air Force and the aircraft industry and require the intervention of the governing bodies. Instructions are given through the GUGB to investigate the reasons for these delays and their initiators through undercover and investigative means."

The "initiators" were quickly identified. Following the director and chief engineer, in April 1938, I.G.'s closest assistants were arrested. Neman - S.Ya. Zhelkovsky and PC Maron, a little later E.I. Baru and A.I. Unica.

"Enemy nests" were burned with red-hot iron. The heads of most factories, the entire top of TsAGI and TsIAM, the leading designers of aircraft and engines were arrested. For A.N. Tupolev, in

addition to the position of Chief Designer of the TsAGI Experimental Aircraft Building, who served as Deputy Head of the Main Directorate of the Aviation Industry, people in civilian clothes came on October 21, 1937. Test pilot M.L. Gallai recalled: "When we arrived at work that morning, we saw that work was in full swing at the hangar site. The painters conjured at the tails of the planes standing on the platform. Before that, on the vertical plumage of machines belonging to our department

the letters "ANT" flaunted, which meant Andrey Nikolaevich Tupolev, the chief designer of all aircraft created at TsAGI. And these letters were hastily smeared over. The oppressive atmosphere of Stalinist terror by this time completely engulfed the country. People, including publicly known ones, one after another disappeared into the dungeons of the NKVD, it seemed, forever. Therefore, special ingenuity was not required to understand what the smeared letters mean - Tupolev was arrested.

After the investigators used some specific methods of interrogation and threatened to kill his family, Andrei Nikolaevich admitted that he was the head of the "Russian Fascist Party", a French agent, and as an additional side job he introduced "perverse American technology", gave wrecking installations and sold drawings of his aircraft to Messerschmitt - according to them, Willy built the Me-110. Of course, such a hardened resident could not engage in espionage and sabotage activities without accomplices. Over the next few months, the ANT brand was crushed, the talented team that gave the country a dozen production cars broke up. The closest employees of the Chief - V.M. Petlyakov, N.I. Bazenkov, V.M. Myasishchev, B.A. Saukke, A.E. Sterlin, M.N. Petrov, HA Sokolov, T.P. Saprykin, D.S. Markov, A.A. Yengibaryan - were arrested and convicted, and the wife of ANT was imprisoned. As an example of monstrous and cynical sabotage, the terms "Tupolevism" and "Petlyakovism" were used.

In 1938–1939, they found themselves on prison bunk: an Italian communist émigré P.L. Bartini is the chief designer of the Research Institute of the Civil Air Fleet, the author of several aircraft, and now a "personal friend of Mussolini" and a seller of world secrets to Italian intelligence; K.A. Kalinin, the creator of the first serial civil aircraft and the combat "flying wing" of the VS-2, at first was his ordinary draftsman, but even there he "mixed up the drawings", had to be arrested; chief designer of BOK aircraft and stratospheric nacelles V.A. Chizhevsky; designers of helicopters and gyroplanes A.M. Cheremukhin and A.M. Isakson; head of the department of oil engines of CIAM A.D. Charomsky - the author of the AN-1 aviation diesel engine with a power of 900 hp; Head of the Research Sector of TsAGI Academician A.I. Nekrasov, "recruited" by the FBI during a trip to America.

In the words of L.D. Trotsky, "the stupidity of the accusations stood at the level of their meanness."

The "German spy" S.M. was seized from the Ilyushin "firm". Eger, from Mikulinskaya - a specialist in power aircraft installations K.V. Minkner (A.A. Mikulin got off lightly - he was simply removed from the post of head of the Design Bureau of Plant No. 24). The turn came to the Kharkov genius, the first in the USSR to use retractable landing gear: I.G. Neman was arrested and sentenced to fifteen years "for organizing sabotage at the plant and as an agent of foreign intelligence", producing "unusable aircraft". Deputy Polikarpov D.L. Tomashevich was accused of killing the national hero Valery Chkalov - in collusion with the director of

plant No. 1 M.A. Usachev and the head of the flight test station V.M. Parae, then the criminal trail led to Zaporozhye, to plant No. 29, where a new purge had to be arranged. No one has escaped justice.

N.G. was raked in for the second time. Michelson, I.M. Kostkina, B.S. Stechkin, the leading aviation gunsmith AB Nadashkevich, and the largest technologist in wooden aircraft construction BC Denisov - on the third. The GUAP commission arrived at the Grokhovsky

Experimental Institute and made a decision: the construction of aircraft is inexpedient, the practically finished G-26 and G-38 machines are to be destroyed, as well as the entire institute as a whole. The fighter and the "flying cruiser" of the "G" brand were burned right on the airfield of plant No. 47 (to be honest, the cars were really "g", especially the wooden "flying cruiser"). Designer P.A. Ivensen was given a five-year stay on Solovki. The director of the institute was caulked in Osoaviakhim, where he served as the head of the economic department and wrote articles for the journal Technique for Youth. Leading aircraft designer B.D. Urlapov quit building airplanes and went to study at a university.

The industrial and bureaucratic nomenklatura, directors and heads of central departments, were eliminated without unnecessary delay - we have no irreplaceable ones. In 1937-1938, TsAGI director N.M. Kharlamov, head of the 8th department of TsAGI V.I. Chekalov, Deputy Head of the TsAGI Personnel Training Department E.M. Furmanov, head of the 1st (aviation) Main Directorate of the People's Commissariat of Defense Industry A.M. Metlo, head of the Main Directorate of the State Fund for Fundamental Art I.F. Tkachev, head of the Air Force Research Institute division commander HH Bazhanov, director of the Voronezh aircraft plant No.-18 S.M. Shabashvili, director of the Perm Motor Plant I.I. Poberezhsky, director of the Gorky aircraft plant No. 21 E.I. Miroshnikov, director of the Moscow aircraft plant No. 24 I.E. Maryamov, director of the Rybinsk Motor Plant No. 26 G.N. Korolev, director of the Irkutsk aircraft plant No.-125 A.G. Gorelits, director of plant No.-207 S.G. Khorkov, deputy head of the planning and technical department of plant No. 156 K.A. Inyushin, director of the rocket NII-3 I.T. Kleymenov. They were in no hurry with the designers - they could still come in

handy. They were humanely given ten to fifteen years of survival in Kolyma or in other places no less life-threatening. So the members of the Commission for the construction of all-metal aircraft went to the camps, providing the country with domestic aluminum - Professor I.S. Sidorin, G.A. Ozerov, I.I. Pogossky, A.I. Putilov.

Although there were exceptions. In the Voronezh prison of the UNKVD, after seven months of investigative actions, K.A. was shot dead. Kalinin, N.G. was "exchanged" in Leningrad. Michelson. In February 1938, one of the pioneers of the Russian aircraft industry, V.N. Chioni: He was born in Athens and, of course, spied for Greece. Then V.I. was killed. Bekauri promised too much, his "anti-Soviet projects" cost too much, moreover, he turned out to be a German spy; the Special Technical Directorate headed by him (the former Ostekhbyuro) was abolished and divided into three independent institutes. In the autumn of 1942, the NKVD remembered Colonel P.I. Grokhovsky, sewed on him the intention to betray the Motherland, participation in a counter-revolutionary organization, and shot him six months later. Wonderfully, being retired, one of the monsters explained the essence of what was happening

Stalin era V.M. Molotov:

"To a large extent, our Russian intelligentsia was closely connected with prosperous peasantry, whose pro-kulak sentiments are a peasant country. The same Tupolev **could**

become a dangerous enemy. He had great connections with the intelligentsia hostile to us. And if he helps the enemy and, thanks to his authority, draws in others who do not want to understand, although and they think that it is useful for the Russian

people... The Tupolevs were at one time a very serious issue for us. For some time they were opponents, and more time was needed to bring them closer to Soviet power ...

Tupolev belongs to that category of intelligentsia that the Soviet state really needs, but in their hearts they are against it, and along the line of personal ties they carried out dangerous and corrupting work, **and even if they didn't, they breathed it.** Yes, they couldn't help it!

Not by propaganda, but by their personal influence, they are dangerous. And it is also impossible not to take into account the fact that at a difficult moment they can become especially dangerous. You can't do without it in politics. They cannot build communism

with their own hands. But we

messed up, of course." It should be noted that the survivors of the "cutting down the forest" understood the party's policy correctly. Boris Stechkin, after serving a total of nine years, will say: "I should have talked less. It's not the time to talk." Moreover, A.D. was not offended. Charomsky - proletarian origin, commissar

youth: "Its own party, its own government - it sometimes makes mistakes, but it also corrects mistakes."

While Tupolev was "approaching" Soviet power, learning to breathe in time with its breath and slurping gruel in the Butyrka prison, his employees who accidentally remained at large were engaged in the production and improvement of mass-produced machines. Work on high-speed medium bombers was entrusted to A.A. Arkhangelsk, for fighters and attack aircraft - P.O. Sukhoi, I.N. fought over the refinement and implementation of TB-7. Nezval. For several years, "Tupolev's name disappeared from the aviation vocabulary of the country. It turned out that in the USSR there were no aircraft known to millions of people by the designation ANT. Instead, they began to talk about aircraft with the abbreviation TsAGI: TsAGI-25,

TsAGI-4 ... "With regard to the promising developments of

J1.L. Kerber recalled: "In order to create at least the illusion of experimental aircraft construction, the then People's Commissar M.M. Kaganovich (his turn soon came, and after an unpleasant conversation with Molotov, as they said in aviation circles, making sure that Kaganovich No. 1 had sacrificed him, he shot himself) transferred a group of secondary chief designers there - Belyaev, Shevchenko, Gudkov, Gorbunov and others. Perhaps they were capable people, but, unfortunately, they did not create anything worthwhile. This was to be expected, because in those conditions, in addition to abilities, it was required to have a diabolical penetrating power in order to penetrate the top and gain authority there. The state system

preferred stable authorities. In order for them, as is typical of specific Russian princes and chief designers, not to squabble among themselves, Kaganovich No. 2 appointed a director over them, a kind of "unter Prishibeev" - Leikin. Of course, he strangled the bite, but he didn't get good planes.

" In principle, there was no time to think about new aircraft. Hunting for "enemies of the people" turned out to be an exciting activity. In 1937, the Air Force did not even issue a task for their design. Although, in order to formulate tactical and technical requirements for promising models of military equipment, the Logistics Department summarized the experience of the war in Spain for almost a year, studying the reports of pilots, collecting information about enemy aircraft and their tactics. However, the Directorate in full force, headed by divisional commander B.I. Bazenkov turned out to be the center of a "terrorist organization", which the valiant Chekists urgently had to neutralize. "Wrecker development" remained unclaimed, the process of updating the aircraft fleet was slowed down for almost three years.

Paralysis of the Soviet design thought of that period A.S. Yakovlev, who combined the qualities of a talented designer and a dexterous courtier, explained in his memoirs the euphoria of success: "Our

fighters were not inferior in speed to the Messerschmitts, but the weapons of both were approximately equivalent ... our maneuverability was better, and the Messers" got a lot out of them. The leaders of our aviation were very happy about this circumstance. An atmosphere of complacency was created, they were in no hurry with the modernization of domestic fighter aircraft. As a result, **from 1936 to**

1939, the Red Army Air Force did not receive a single new combat vehicle (except for the dubious value of the BB-22, whose name front-line pilots deciphered as "useless bomber").

Meanwhile, hundreds of aviation specialists were found in prisons and camps. They wrote appeals to all instances, offering to "atone for their guilt" by hard work for the good of the Motherland, to build the best aircraft in the world and the most advanced engines in the world. Experienced inmates like A.V. Nadashkevich was practically no doubt about the result: "They will shoot the apostates, otherwise the king will remain naked. As for us, since we know how to make excellent aircraft, without which the country

cannot live, they will not touch us. Moreover, remember, you are hung with orders, and if one day it is necessary, they will be removed, and you - you will again go to the Lubyanka.

In fact, it was a sin not to use such a resource - "the whole color of Russian national aviation thought." There were serf artists and serf artists in Russian history, why not be a serf scientist? Let us recall the thesis of the ever-living Ilyich about the corrupting effect on "specialists" of high salaries?

In the summer of 1938, after a lively correspondence between the people's commissariats of the defense industry and internal affairs, design teams began to form from the arrested "enemies of the people", which, under the protection of the NKVD, were supposed to strengthen the country's defense capability. They existed within the Department of Special Design Bureaus, later renamed the 4th Special Department of the NKVD. Enemies-engineers were offered a simple choice: either turn into "camp dust", or: "Airplane - into the air, you - home." So that they work hard on the conscience.

In one of these "sharashkin offices", having washed the year with interrogations, A.N. was offered to work. Tupolev, and for starters, make a list of well-known aviation specialists. "Frankly, I was extremely puzzled," Andrey Nikolaevich said, "I knew all those arrested before me, but after? Will it not turn out that according to my list God knows how many more people will be imprisoned? On reflection, I decided to rewrite everyone I know, and I knew everyone. Can't it be that the entire aviation industry was jailed? This position seemed reasonable to me, and I wrote a list of 200 people. And what do you think, it turned out that, with a rare exception, all of them are already behind bars."

The organization, called TsKB-29 of the NKVD, was housed in the eight-story building of TsAGI KOSOS, converted into a special prison. The Central Design Bureau had four independent bureaus, each of which, under the leadership of the Chekist, worked on its own project. Group V.M. Petlyakova designed the long-range high-altitude fighter "100" with two engines, V.M. Myasishcheva - long-range high-altitude bomber "102", D.L. Tomashevich - single-engine fighter "110". Group A.N. Tupolev - department "103" - a four-engine dive bomber PB, designed to destroy large-capacity warships. With a range of 6,000 km, it was supposed to rain down heavy armor-piercing bombs on British squadrons from a height of 10,000 m at a speed of 900 km / h and smash them right "in the lair". A legend has taken root that the "omnipotent" L.P. Beria. However, a long-term colleague S.M. Jaeger definitely states that the idea

belonged to Tupolev himself:

"When A.N. Tupolev in the conditions of imprisonment (in the Bolshevik camp) was "offered" to work, he came out with a proposal to develop a long-range dive bomber.

To us, a small group of engineers who then worked with him (R.L. Bartini, G.S. Frenkel, A.I. Nekrasov, A.V. Nadashkevich, A.Yu. Rogov), Tupolev explained the idea in this way creation of this aircraft.

— 1939! It looks like a war is brewing! In all likelihood, this will be a war between Western Europe and the USSR, and England will lead it, she will become the main enemy. England's strength lies in her navy. Therefore, it is necessary first of all to create weapons to fight the fleet, and not only when it approaches our shores in battle formations, but also at its bases in England. In general, "with a deep understanding of the military-political situation in the world", Andrey

Nikolayevich knew how to intrigue the Soviet leadership.

Engineers were sent to plant number-82, located in Tushino. The special contingent consisted of 65 people. Here were A.D. Charomsky, B.S. Stechkin, former chief designers of engine-building plants A.M. Dobrotvorsky, M.A. Kolossov, A.S. Nazarov, rocket engine specialist V.P. Glushko.

January 11, 1939 Decree of the Presidium of the Supreme Soviet of the USSR People's Commissariat

The defense industry was divided into the People's Commissariat of the aviation industry, the People's Commissariat of the shipbuilding industry, the People's Commissariat of ammunition and the People's Commissariat of armaments. In the system of the aviation industry, headed by

M.M. Kaganovich, included 86 plants. Following this, a representative meeting on aviation issues was held in the Kremlin. It was attended by the leaders of the People's Commissariat, military leaders, directors of factories, designers, famous pilots. The participants were asked how to eliminate the emerging "backward of the country in the field of military aviation" as soon as possible. It is not known which "secret adviser" opened the Master's eyes to such a blatantly unfavorable situation in the aircraft industry. In terms of the number of aircraft produced, the USSR, to put it mildly, was not inferior to any country in the world, surpassing, for example, France, three times. The reports of the Air Force Research Institute based on the results of comparative training battles led to the conclusion that Soviet aircraft are qualitatively superior to German o

"The Messerschmidt-109 aircraft with the YuMO-2Yu engine, according to its flight and tactical data, is lower than the high-speed fighter aircraft adopted by the Red Army Air Force ...

1. The Heinkel-111 aircraft is lower in speed than the corresponding aircraft of domestic production.

2. The rate of climb, range and ceiling of the Heinkel-111 aircraft are significantly below the level of requirements for modern twin-engine bombers.

Nevertheless, Comrade Stalin decided to re-equip the entire Soviet aviation as soon as possible. One of the historical tasks was the creation within one year of high-speed fighters and bombers of a new generation. For which it was proposed to organize new design bureaus, to involve everyone in the work and, first of all, "young design forces not connected with the mistakes of the past", who were to pull aviation out of the swamp, where it was dragged by "old specialists".

July 17, 1939 K.E. Voroshilov sent I.V. Stalin and V.M. Molotov draft resolution "On the development of aircraft factories of the NKAP". The document provided for an increase in the capacity of existing factories, as well as the construction of four new ones in order to eventually produce 10,400 bombers, 13,000 fighters, 5,800 reconnaissance and attack aircraft in 1941, in total - 29,200 aircraft excluding naval aviation. Moreover, it was emphasized that the indicated capacities did not fully meet the needs of the Air Force for 1941. According to the resolution of the

Politburo of the Central Committee of the All-Union Communist Party of Bolsheviks "On the Development of Aircraft Engine Plants", adopted in August, the production of aircraft engines was planned to be doubled. In September, a resolution "On the reconstruction of existing and construction of new aircraft factories" was adopted. It provided for the construction of 9 new factories, the reconstruction of 9 existing ones and an increase in the production capacity of the aircraft industry by the end of 1941 by more than one and a half times. In October, a similar decree followed on aggregate and screw plants. Large orders were made to Western firms for the supply of machine tools and various equipment.

After the conclusion of a secret alliance with Hitler and the joint partition of Poland with the Nazis, a period of mutually beneficial political and military-economic cooperation began between the USSR and Germany. Already in October 1939, the People's Commissariat of Defense compiled a long list of samples of German military equipment, which was supposed to be bought for study. To select the "goods" in the Reich with the firm intention to spend a billion marks, a crowded commission headed by the people's commissar of the shipbuilding industry I.F. Tevosyan. The aviation and aircraft engine groups of the commission included A.I. Gusev, S.V. Ilyushin, HH Polikarpov, A.S. Yakovlev, A.D. Shvetsov, I.F. Petrov, A.I. Gusev, V.P. Kuznetsov, P.V. Dementiev. The program of the visit was extensive, including meetings with Reichsmarschall Goering and his deputy, General Udet.

Within a month, the hospitable hosts showed the Soviet experts most of the flagships and "lighthouses" of the National Socialist aircraft industry - the Junkers, Messerschmitt, Henschel, Focke-Wulf, Heinkel, Arado, Blom and Voss, Dornier, Bücker, engine building Hirt, BMW, Argus, Junkers, enterprises producing propellers, radiators, bearings, piston rings, instruments, Air Force Center in Rechlin, armament, Scientific Research Aviation Institute in Göttingen. On the ground and in the air, many types of combat vehicles were demonstrated, experimental aircraft and recently entered service: He-100, FW-187, Ar-197, Bf-109E, Bf-110 fighters, Ju-87 bombers, Ju-88, He-111, Do-215, Do-217, reconnaissance aircraft Bv-138, Bv-141, He-115, Hs-126, FW-189, four-engine FW-200, sports and training aircraft. The guests also visited a bomber air group in Hesse, a dive squadron in Cologne, a long-range reconnaissance squadron in Koblenz, the base of the Richthofen fighter squadron, and Goering's underground command center.

Such openness was alarming and aroused suspicions that the Germans were showing uninteresting junk. One of the Soviet generals so bluntly told the hosts "in a rather tactless manner" and demanded to show "the technology of today." The offended Udet beat his chest with his fist and swore by the honor of the officer that the vehicles presented were all that the Luftwaffe had. And he spoke the pure truth. Well, the "fascists" hid their promising developments, like the latest "Fokkers" and jet fighters. What did you want to dig into Hitler's safe?

(On the other hand, our designers fully appreciated the achievements of their German colleagues, and they could only dream of German working conditions, not to mention those engineers who plowed behind a fence with a thorn for food, the opportunity to see relatives every two months and a shaky hope for a review of the case: "Knives, forks, plates, from which we are rather unaccustomed, emphasize the absurdity of my bowler hat and spoon. A girl in an apron brings meat with pasta and asks: "You (this is me, who was called "bastard" yesterday!) Tea or cocoa?" The newcomer pinched his leg painfully, painfully: "Oh my God, is this reality or fantasy?").

At a meeting of the Technical Council of the NKAP, held in December 1939, the keynote speaker HH Polikarpov stated that "German aircraft construction has stepped very far and came out on top in the world aviation industry", and revealed some "fascist" secrets:

"In terms of fighters, the Germans in terms of fighters attach great importance to speed as the main quality of this type. They say that they only accept high-speed fighters, i.e., vertical maneuver; they consider a horizontal maneuver to be a passive defense, entailing a loss of speed, and therefore completely unacceptable. Therefore, they believe that maneuverable fighters are very good as passive weapons, and they recognize only high-speed fighters with vertical maneuver as active weapons. In order to achieve high speeds, they go to a huge increase in specific loads, that is, to reduce the wing area, to increase landing speeds, to lighten the machine in every possible way due to small dimensions and look for new ways to reduce the drag of both the entire machine and its separate parts...

In terms of the development of external forms, the Germans have gone far, especially Heinkel. He gives the cigar-like shape of the machines and pays serious attention to the condition of the surfaces. From this point of view, Heinkel has a lot to

learn ... From the experience of the war in Spain, they believe that the tail protection must be very good, so the bomber crew consists of 4 people: a front navigator, a pilot and two rear gunners - one under the tail, the other on top ... German aircraft

have a rather narrow assortment. There you will not find an aircraft made from 5-8 materials. Usually the aircraft is made of two materials: aluminum alloy and steel, and often the percentage of steel is very low. If we are in our

aircraft use wood, canvas, duralumin, steel and plastics, then the aircraft is made of aluminum alloys, electron and steel ... When we asked why they use duralumin so widely, for example, in spars, fuselage, etc., they told us that, unfortunately, we are a poor country, and therefore we use steel for cannons, and for airplanes we take duralumin ... They widely use casting and stamping, cold and hot ...

The equipment of the German aircraft is very rich, in particular, the Germans pay much attention to communications. They believe that a car without a radio is a blind car ... No one approves

the draft design, only the layout is approved ... Factory tests are carried out by the factory itself without any involvement from the Air Force, and after they have brought the car to a safe state, the Air Force arrives with a pilot, conducts flights or takes the car to him and then gives a definite conclusion about the suitability of this car ...

In drawings that are signed in a wide series, no changes are allowed. The drawings are signed there by the aviation ministry, after which nothing can be changed there, or the change must be agreed with the aviation ministry ... They work out the zero series so seriously that the Germans do not understand how an error can appear in a wide series. Therefore, the acceptance of the zero series is carried out very carefully, because this is the last obstacle in which

car".

That is, you cannot take an aircraft into service, and then teach it to fly for two years. The closeness of Soviet science, total censorship, secrecy brought to the point of absurdity, forced each design bureau to invent its own "bicycle", step on the same rake, spend time and money on developing obviously dead-end directions (which would later be announced as great achievements) - all this slowed down development, led to a lag and new attempts to "catch up and overtake" the West, copying another Western model under the Soviet brand. V.M. wrote about this problem.

Molotov Academician V.I. Vernadsky in 1936: "One of the main elements of scientific work is the wide and rapid awareness of the scientist about the ongoing scientific movement and the course of scientific thought. Science is one, and the scientist is infinitely diverse in the nature and scope of his interests.

Only he himself can set the limits of his scientific thought. Censorship can't limit.

One of the most basic shortcomings of scientific work in our Union, which requires an immediate, radical and abrupt change, is the limitedness of our acquaintance with the world scientific movement.

It is disorganized and deteriorating. This is a great, but reparable misfortune...

Since 1935 (as far as I know, this was not the case even under tsarist censorship), our censorship turned its attention to scientific literature, which penetrates so insufficiently - according to our needs and possibilities - to us. A number of articles and knowledge become inaccessible to our scientists."

About this he wrote to the head of the department of science of the Central Committee of the All-Union Communist Party of Bolsheviks

S.G. Suvorov Academician P.L. Kapitsa already in 1944: "Imagining that you can overtake on secret paths is not real strength. If we choose this path of secret movement, we will never have faith in our own power, and we will not be able to convince others of it.

That is why they failed to "convince" that there was never real power, and secrecy was not only prevented the embarrassment of Soviet minds, but also concealed backwardness.

The young designer A.S. Yakovlev:

"In Germany, research work is very well done ... The development of each type of combat aircraft is extremely predetermined there, and each designer has the opportunity to work stably, as far as possible in experimental aircraft construction ... How does the designer receive

the task of designing this or that aircraft? The head of the technical support of the Air Force in Germany speaks directly with the designer in the presence of one of the responsible executors of the Ministry of Aviation for this type of aircraft. These 2-3 people agree, define the main data, the designer thinks it over, gives an answer, and no one else knows anything about the task. The car is considered secret until it goes into mass production. How do we accept a prototype aircraft? It starts with Smushkevich, then the ego goes to the Glavk for discussion, where 12 people sit, then at the People's

Commissar, where 30 people discuss it, then it goes to the highest organization. As a result, by the time the designer outlines the task for the aircraft, which he must do in a year, 60-70 people are aware of this, or even more. But the secrecy is kept incredible ...

German designers have wind tunnels at their disposal, where all the main purges are carried out, but there are also chimneys, where a number of practical issues can be checked. Then each designer of the pilot plant has at his disposal a strength laboratory and a vibration laboratory. We see that each designer tests the aircraft in parts and the aircraft as a whole at his plant, in the experimental shop. We saw a number of parts that are tested for fatigue, for shaking in special machines, so that before the machine comes out, the characteristics of individual parts are already clear ... Then the exchange of experience helps the German designers a lot. To our shame, we must confess that

we almost all work in a very closed way and there is no compelling reason to make us familiar with what many of the other designers are doing. We often have to resolve issues that have already been resolved by others, we have to run into bugs that other constructors have suffered.

In Germany, there is a unified system of drawing economy not only for aviation, but for the entire industry. In our aviation

industry, each plant has its own drawing system, each plant has its own numbering, its own system of tolerances, its own system of changes. As a result, it turns out that when a new machine is introduced into a series, the plant is forced to re-process all the drawings. As a result, a colossal amount of time is spent, more errors accumulate than when building an experimental machine ...

German designers, in addition to the fact that they have the opportunity to get acquainted with the experience of other factories, they have one more help, very significant, this is technical literature, not to mention periodical literature. There are several scientific journals that publish all the modern material.

They also have wonderful books - reference books for designers. These are the most valuable things, where we have solutions to a number of elementary things over which we are racking our brains. We don't have it and it's very sad.

The German designer is more independent than we are ... During the entire time of designing, building an aircraft and testing, he only once faced with guardianship - upon presentation of the layout. Nobody touches him anymore.

And how are we doing it? Who does not meddle in the work of the designer? Air Force Research Institute, UMS, Glavk, Inspectorate from

the People's Commissariat ... And everyone who does not come, everyone demands, everyone indicates, everyone obliges. On January 26, 1940, the Politburo adopted a resolution "On the work of the People's Commissariat of the Aviation Industry", aimed at the speedy development of new models

combat aircraft and shortening the transition to mass production.

MM. Kaganovich was removed from his post and appointed the new People's Commissar of the Secretary of the Gorky Regional Committee A.I. Shakhurin, and his deputy for experimental aircraft construction - AC Yakovlev. Following was the reorganization of TsAGI, by the summer the Flight Research Institute was created with the latest equipment, including German, the publication of the handbook "Guide for Designers" began. On the recommendations

of a delegation that visited Germany, the People's Commissariat of Trade of the USSR issued an order for the purchase of German aircraft and equipment. The list included more than 100 titles. Numerous groups of specialists went to Germany in February-March 1940 to control the fulfillment of the government order. They included leaders of the aviation industry and research institutes, directors of factories, specialists in engines, weapons, instruments, radio equipment, test pilots, and representatives of the Air Force. At the end of April, purchased planes piloted by German pilots began to land in Moscow. Among them were Bf-109E and Bf-11 OS fighters - in five copies each, two Ju-88 and two Do-215B bombers, two Fi-156 communications aircraft, six He-100V-8 record fighters - a total of 36 machines of 12 types, in most of its issue of 1939

of the year.

Merchants were not interested in the Ju-87 dive bomber: slow-moving, no armor, indecently low bomb load, weak defensive armament, in general, a clearly outdated vehicle. This opinion seemed to be confirmed by the air battle over Britain, which revealed the vulnerability of the "lappeters" from the attacks of the "spitfires" and "Hurricanes". Already six days after the start of the operation, the Luftwaffe command, in order to prevent the complete extermination of the dive bombers, decided to stop using the Ju-87. And Non-111 is the same junk. From August to September 1940, out of 600 bombers of this type, the British destroyed 395 vehicles. Given such heavy losses, the Germans stopped using the Heinkel as a day bomber, and from mid-September these aircraft made only single night raids.

German aircraft were sent for study at the Air Force Research Institute, the Flight Research Institute, TsAGI, CIAM and other organizations. Scrupulous study and testing of the arrived aviation equipment lasted from May to October. At the end of 1940, according to the test results, the head of the Air Force Research Institute, brig engineer A.I. Filin prepared a special report, which noted that German fighters significantly outperform the I-16 in speed, but were inferior to the latest Soviet aircraft by 40–60 km/h. Initially, the concerns were caused by the Non-100, which was passed off by the Germans as a serial fighter, it squeezed out 650 km / h, but it quickly became clear that this record aircraft was a dummy, "is not brought to a reliable state for combat work." As for the bombers, there was not much difference at all, and the new Soviet models, in comparison with the Germans, "possessed the best speed qualities." German engines and weapons did not arouse much interest.

Another thing is that the German aircraft significantly surpassed the domestic ones in terms of performance, was convenient for the service personnel and crew, easy to learn, distinguished by a well-thought-out design, a high degree of unification, saturation with instruments and automation. The report of the Air Force Research Institute noted:

"1. A characteristic feature of all German aircraft is that when designing any type of aircraft, the designer pays a lot of attention to maximizing the ease of operation of the aircraft in the field and the convenience of performing combat missions. To this end, the design of the aircraft provides for a number of automatic devices that facilitate the work of the pilot ... 2. The second

characteristic feature of German aircraft is the widespread introduction of standard models: weapons, special equipment, propeller-motor units, aircraft parts and materials. These activities lead to

a significant simplification of the design of experimental aircraft, their operation, the supply of spare parts and the training of the air force flight crew.

3. In addition, all German aircraft in service with the Air Force differ sharply from domestic ones in their large stability reserves, which also significantly increases flight safety, aircraft survivability and simplifies the piloting technique and mastering by low-skilled combat pilots.

In addition, the survivability of an aircraft in combat is significantly increased by that the aircraft is equipped with fiber-protected tanks ... "

It took 4 minutes to remove the propeller from the Ju-88. On the SB bomber, the same procedure took exactly an hour. Installing the engine on the Junkers took three hours, on the SB - ten, and on the DB-3 - all twelve. After getting acquainted with German aircraft, the military began to demand the mandatory use of radio communications equipment on board and the adoption of measures to increase longitudinal

stability. But the main thing is not that, the main thing is that ours flew faster. Although, various useful things were not a sin to "copy". Almost 3,500 specialists got acquainted with the achievements of German designers. Even for the special contingent of "sharashkas", the curators of the NKVD organized a sightseeing tour. So, Kerber recalls: "We are being taken to inspect cars with a swastika on their keels. Here it is, military equipment that defeated Poland, Denmark, Norway, Holland, Belgium and France, but so far has broken its teeth in England. There are a lot of interesting things in airplanes that you can borrow without remorse." After a detailed disassembly of the most liked samples, the leading plants in the industry were entrusted with the introduction of German experience in the Soviet

aircraft industry. German delegations came to the Union on return visits, they, too, alternating excursions with banquets, were shown the best aircraft factories, the latest models of serial aircraft and engines.

Analyzing the reasons that prompted Hitler to such close military-technical cooperation with Stalin, A.S. Yakovlev explains: "The Nazis, blinded by their success in conquering Europe, did not even think that the Russians could compete with them. They were so sure of their military and technical superiority that, revealing the secrets of their aviation, they only thought about how to impress us even more, shock our imagination and intimidate. In addition, they tried to "intimidate" Our engineers by displaying captured British aircraft. Unfortunately, Alexander Sergeevich does not say what "came into his head" when he, in May 1941, as deputy people's commissar, showed the "fascists" the secrets of Soviet aviation, however, he did not remember this. On the other hand, the German Air Force Attaché in Moscow, Colonel Aschenbrenner, describing his visit to Plant No. 1 and airfields, where brand new sharp-nosed MiG fighters lined up in orderly lines, considered it necessary to literally quote the statement of designer A.I. Mikoyan: "We showed you what we have and what we do. And whoever tries to attack us will be destroyed!" Of course, I.V. Stalin, who provided the Fuhrer with a reliable rear in the fight against Western democracies, was not afraid.

Iosif Vissarionovich was upset not by the reports of General Filin, but by the "important conclusions" reached by the heads of trade and espionage delegations and Soviet intelligence.

People's Commissar A.I. Shakhurin, shortly after his appointment, reported that, taking into account the factories of the countries occupied and dependent on Germany, the German aviation industry was "about twice as powerful as ours." Stalin was "somewhat surprised" and asked to submit his considerations in writing. Major General I.F. Petrov, upon returning from a business trip, reported that, according to his calculations, the Germans were capable of producing 70-80 aircraft per day. Military analysts firmly assured: yes, they are not just capable, they are already riveting 2000 vehicles monthly. In reality, the aviation industry of the warring Reich in 1939 produced an average of 23 aircraft per day, in 1940 - 27, in 1941 - 30.

(The story is reminiscent of an anecdote on a visit to Germany in August 1938 by the Chief of Staff of the French Air Force, General Vuillemin, to whom the Germans showed the latest heavy fighter Bf-110: "A

delegation of the French Air Force headquarters was brought to the Messerschmitt A.G. factory." After a spectacular demonstration of firepower of the new "hunter", General Wuyemin was shown a "part" of the assembly line and "newly released" Bf-110s that took off at the correct intervals. This spectacular demonstration of "mass production" was nothing more than a well-planned hoax. Intermittently the aircraft were pre-production Bf-110B-0s and a few Bf-110B-1s which were specially assembled at the Augsburg factory, after takeoff they landed out of sight, transported back to be airborne again in front of the guests. , but in reality only four Bf-110B-1s were produced by that time. The production of Bf-110B during 1938 barely reached two cars per week ...

").

Comrade Stalin was completely upset and ordered to review all plans and bring the production of aircraft to the German standard, and by the end of 1940 to reach the production level of 50 aircraft per day. The rush began. Already

in February

1940, the Defense Committee increased the semi-annual program for the production of aircraft and aircraft engines by almost 40%. Without waiting for the completion of the construction of new specialized plants, 60 enterprises from other sectors of the national economy were transferred to the People's Commissariat of the aviation industry. A.I.

Shakhurin writes: "According to the decision of the party and government, the regions and cities handed over to us many existing factories, and the factories are large, good, where it was possible to deploy aircraft production. But there were factories and small ones, which were far removed from aviation technology. It happened that they simply gave away premises: in one of the cities - the building of a ballet school, in another - a factory of musical instruments, in the third - an enterprise for the manufacture of typewriters, in the fourth - a garage, etc., etc. And one of the leaders of the Bolshoi theater, which I once happened to meet, jokingly remarked: "Listen, you take everything, will you take the Bolshoi Theater too? .. We took everything or almost everything. For example, they took away almost

all aluminum, magnesium, cobalt, alloyed steels, the absolute majority of alloyed pipes, etc. Here we were monopolists: we were given something that was not given to anyone. Much was still lacking in the country. Some industries are just starting to develop. But they didn't skimp on aviation." The aircraft factories worked in three shifts. In June, the Presidium of the Supreme Soviet of the USSR

adopted a decree on the transition to

an eight-hour working day, a seven-day working week and a ban on unauthorized leaving of workers and employees from enterprises and institutions. There were no more weekends. The "victorious proletarian" was attached to the machine for life. Being late for work more than 20 minutes was now equated with absenteeism, for which the worker was no longer administrative, but criminally liable. In just six months, by decree of June 26, over two million people were convicted in the country! As soon as the Bolsheviks once again became concerned about the "security of the country", food disappeared in the country, bread queues lined up in the cities again. The card system of rationed distribution of products was revived - in the form of points of closed trade, created to provide strategic industries, transport and the military. So, workers in the aviation industry in 1940 received from 300 to 700 grams of meat, 1-1.5 kilograms of fish, 300 grams of butter per family per month.

On July 13, the People's Commissar of Defense and the Chief of the General Staff proposed that the government transfer the aviation industry to a wartime situation. So who is against it! No barriers to patriots! On July 16, the Deputy Chairman of the Council of People's Commissars of HA Voznesensky

meeting on the mobilization deployment of the aviation industry, at which the military proposed to increase the production capacity in 1941 to 36,000 combat aircraft per year. And in this matter the Politburo unconditionally accepted the timely initiative. True, then they thought, figured out the possibilities, and on December 7 the application was halved, approving the production program for 1941 in the amount of 16,530 combat vehicles - 6,070 bombers, 8,510 fighters, 1,750 attack aircraft, 200 reconnaissance aircraft. Plus 3620 training and transport aircraft. For the sake of fulfilling this program, the NKAP was allowed to stop repairing aircraft and engines in service with the Air Force - they will manage on their own.

In November 1940, the Politburo ordered the directors of aircraft and aircraft engine factories to report daily to the Central Committee on the number of products produced. People's commissars, directors of enterprises and heads of transport departments were personally responsible for fulfilling orders and transporting goods for the aviation industry on time. It was decided to drastically reduce the testing time of

experimental machines. In a number of cases, the aircraft were launched into mass production even before the end of the tests. The doubling of the number of factories led to an influx of unskilled labor. Monstrous production plans led to the simplification and disruption of technology. The "gap between the ability to design an aircraft well and to produce it very poorly and for a long time", noted by Belov, only increased, or rather, now they did it badly, but quickly. Therefore, the point is not that the Germans had better planes - the Germans made them better, without Stakhanovism and National Socialist competitions. And they didn't have pests. In the dungeons of the Gestapo did not design aircraft. And the Nazi generals knew from somewhere "that from the moment the drawing up of the drawings of the aircraft to the adoption of it into service was required for the most part from 4 to 5 years, and the corresponding period for aircraft engines was 5-6 years." In 1940, 45 samples of new machines were rolled out of the design bureaus, of which 12

were put into service. What did the "Soviet Motherland" get in the end, which "days and nights at the open-hearth furnaces" strained in wartime? In 1939, the results of the competition for the best reconnaissance and short-range bomber of the Ivanov

brand were summed up. Aircraft D.P. Grigorovich was not completed due to the untimely death of the designer, as well as "Ivanov" by I. G. Neman - due to "prison factors". Polikarpov's HH machine was successfully tested, but for unknown reasons it was not put into service, and his design bureau was deprived of funding. Brigade P.O. Sukhoi built an all-metal two-seat monoplane ANT-51, which was an almost exact copy of Polikarpov's aircraft, with the same and even slightly worse flight characteristics and weaker weapons. Nevertheless, Pavel Osipovich was offered to continue work: instead of the M-62 engine, a more powerful and high-altitude M-87 (930 hp) and switch to a mixed design (metal wings and a wooden fuselage).

On state tests, an aircraft with a takeoff weight of 4030 kg showed a speed of 375 km / h at the ground and 470 km / h at an altitude of 5600 m. The armament consisted of six ShKAS machine guns: two in the wing consoles, one on the MV-5 turret in the rear turret and one in the lower hatch installation. Up to 400 kg of small bombs could be placed on the internal suspension, two 250 kg bombs on the external. Pilot B.N. Pokrovsky wrote in his report that the aircraft "is an example of a well-thought-out cultural machine with high speeds, good rate of climb, good visibility, and sensitivity to control. Flights on this aircraft leave a pleasant impression of the car."

At the end of March 1939, a decision was issued to launch the aircraft in a series called BB-1 at the Kharkov aircraft building plant and the Saratov combine. Sukhoi was appointed chief designer of Plant No. 289. He was instructed to modify the aircraft under the M-88 engine with a two-speed supercharger, to bring

h, the speed of the car is up to 500 km / h, create on her base armored the attack aircraft-bomber ShB.

In 1940, the BB-1 was released with an M-88B engine with a power of 1100 hp. and three-bladed propeller. The aircraft was named Su-2. Its speed increased by 50 km / h, the flight range was 1000 km. Instead of four wing machine guns, two were left and the hatch ShKAS was removed. The pilot was protected by a 9 mm armored back. Military pilots noted that the aircraft was simple and safe to operate, easy to master, easy to repair, and took off freely from a dirt strip with a maximum bomb load. In all respects, he surpassed foreign machines of a similar concept - the Polish R-23V "Karas" and the British "Battle". However, the introduction of the aircraft into the series was extremely slow, and until the end of 1939, Soviet aviation did not receive a single "extremely valuable"

BB-1 bomber. The flagships of the Soviet aircraft industry were the four largest, provided with the most modern equipment and personnel, factories - No. 1, 18, 21, 22, but, despite all efforts, Sukhoi was not allowed to enter any of them. A new order by the NKAP dated February 15, 1940 ordered to stop all preparatory work at the Sarcombine and expand the construction of short-range bombers at the Taganrog plant named after Dimitrov No. 31, which previously specialized in the production of flying boats, and plant No. 207 in Dolgoprudny, which was engaged in military airships. It took another year to reconstruct the last two plants, install equipment, develop technology, and establish cooperation with other enterprises. Then plant number-31 was once again reoriented to the production of other products. It took a lot of time to fine-tune the propeller group: the M-88 engine shook, bounced, smoked, spat oil and jammed, which led vigilant comrades to think that the "sabotage" at the engine plant No. 29 had not been completely uprooted. As a result, the mass flow of the Su-2 into combat units began only in January 1941, it was planned to produce 1150 vehicles per year (as of June 1, according to the reports of the factories, the military representatives accepted 413 dryers, eight short-range bomber aviation regiments managed to master them). Moreover, the engine continued to act up, and "castor oil thrown out of the engine prompter splashed the lower transparent part of the navigator's cabin and the OPB-1m sight, preventing the bomber from aiming at the target." With the outbreak

of war, a quartet of wing machine guns and a hatch installation with an MV-2 turret were restored on aircraft, the navigator's place was covered with sheets of cemented armor. True., For this, it was necessary to dismantle the radio semi-compass, the radio station and reduce the bomb load to 400 kg.

In general, the airplane was not bad, as an engineering design, and quite combat-ready in capable hands. But the realities of the war have shown that a single-engine, horizontal mini-bomber, to put it mildly, has no value. During the Polish campaign, 120 slow-moving "carp", working mainly at low altitudes, demonstrated their defenselessness against the attacks of "Messers" and vulnerability to fire from ground-based air defense systems. For two weeks of September battles, they were knocked out by 90%. The participation in the battle for France of two hundred Battle aircraft, much more advanced than the P-23, ended just as sadly.

"Then it quickly became clear," writes V.B. Shavrov, - that this type of reconnaissance and short-range bomber has already become obsolete, fundamentally outdated and no longer needed. His flight data and weapons no longer met the demands of the war. Its functions have been universally and firmly transferred to twin-engine high-speed aircraft ... "

Moreover, the obsolete and "not meeting the needs" Su-2 cost the country dearly: 845 kg of duralumin, 440 kg of steel were spent on the production of one aircraft, and it cost more than twice as much as the SB bomber.

In 1942, having produced 877 copies, the Su-2 was removed from the assembly line. At the beginning of 1939, the star of the 33-year-old aviation designer A.S.

Yakovlev. Prior to that, his design bureau was engaged exclusively in light-engine aviation - sports, passenger, mail, training aircraft. Alexander Sergeevich knew how to present the goods with his face, his designs were distinguished by the thoroughness of the finish, and the line of nineteen machines he created was held under the brand name "AIR" - in honor of the Chairman of the Council of People's Commissars of the USSR A.I. Rykov, however, none of them got into the mass series. "Awkward" happened when Rykov was exposed and shot as a vile hireling of world imperialism.

In 1938, the Yakovlev Design Bureau, on its own initiative, "bravely set out to build an original" twin-engine high-speed multi-purpose aircraft with M-103 engines. With an emphasis on the word "high-speed" - at least 600 km / h. To achieve this goal, the fuselage was compressed as much as possible, the all-wood wings were made one-piece, and the bottoms of the gas tanks served simultaneously as the lower part of the wing, and the oil coolers were placed at the rear of the engine nacelles. The navigator's cockpit was inscribed in the contour of the fuselage. With a design flight weight of 4000 kg, the specific load on the wing was 148 kg / sq. m. In January 1939, when the prototype "Aircraft 22" was brought to factory tests, the car developed a phenomenal speed of 560 km / h. The report of the Air Force Research Institute emphasized:

"Aircraft 22 is cheap, has good manufacturing performance, its technology, like wood, is simple, can be easily mastered ... In terms of the culture of finishing the outer surface, the production performance of individual components and assemblies, aircraft 22 can serve as an example for the domestic aviation industry."

In general, the military really liked the beautiful, swift, painted in red and white, sparkling polished aircraft. The outstanding achievement of the young Soviet designer was reported to the highest authorities. April 27 A.S. Yakovlev was invited to the Kremlin, treated kindly, issued the Stalin Prize and a personal car "ZIS". Alexander Sergeevich very colorfully described his first meeting with the leaders and the lecture he gave for dummies along the way: "Stalin, Molotov and Voroshilov were very interested in my BB car and everyone asked how it was possible with the same engines and the same bomb load as the SB, get a speed greater than the SB speed. I explained that it's all about aerodynamics, that the Security Council was designed 5 years ago, and science has advanced a lot during this time. In addition, we managed to make our bomber much easier than the SB. Stalin walked around the office, was surprised and said: "Miracles, just miracles, this is a revolution in aviation." Immediately after the conversation in the Kremlin, the Yakovlev Design Bureau began

transferring the working drawings to Plant No. 1 for the preparation of mass production. Officially, "Aircraft 22" was put into production after state tests in accordance with the decision of the Defense Committee of June 20, 1939.

The "miracles of aerodynamics" ended as soon as they tried to make a mass bomber out of a machine of unknown purpose, capable of replacing the Tupolev SB. Or, at worst, a scout. The essence of the problem was that the supposedly combat aircraft, to applause, passed all the tests without weapons, bomb loads, photographic equipment, navigation devices, and even without an internal intercom. The customer, wanting to get something useful, offered to move the navigator's cockpit forward so that he could at least "show" something to the pilot with his hand: like "Messer" on the tail or "target below us". The bomb bay, on the contrary, was asked to be moved back, and the fuselage gas tanks were also removed so that four 100-kg bombs could fit inside the fuselage. Two more bombs were planned to be carried on an external sling. I would like to install defensive weapons at the same time, provide acceptable firing angles for the upper firing point, find a place for a radio station and some other equipment. In sum, these requirements meant a reconfiguration of the machine, an increase in its mass, deterioration

stability and the inevitable decrease in flight performance.

The first serial short-range bomber BB-22 (aka Yak-2) was only able to be presented by factory No. 1 in March 1940. The flight weight of the machine increased to 5660 kg, the ceiling dropped from 10,000 to 8900 m, and the maximum speed at an altitude of 5000 m - up to 515 km / h - again without a bomb load. The specific load on the wing increased to 192.5 kg/sq.m. Small arms consisted of a "stern" machine gun on a retractable pivot mount. Two FAB-50s or FAB-100s, or 20 fragmentation bombs, were suspended in the bomb bay; under the wing there were two holders for the FAB-50 or FAB-100. Without bombs on an external sling, the BB-22 developed 478 km / h (moreover, in this version, more than 200 kg could not be taken into the bomb bay, otherwise the plane would tip over "on its back" due to a shift in the center of gravity). And with 400 kg "in the belly" and 200 kg under the wings (for balance), the plane squeezed no more than 445 km / h - like the "real" SB bomber. For ceremonial displays and government commissions, the airframe was carefully putty before painting and polished after it, gaining additional kilometers per hour. In the machines of serial execution, the wind was walking between the numerous slots, noticeably worsening the aerodynamics.

In October 1940, the production of the modernized BB-22 bis (Yak-4) with M-105 engines and outboard gas tanks began at the Tushino Plant No. 81. Flight characteristics have improved somewhat, but takeoff weight and wing loading have increased even more. The pilots noted that with the engines turned off, "the car plans with a stone." Due to the peculiarities of alignment, military pilots were taught first to drop bombs from the internal suspension, and only then from the external one. The navigator, squeezed between the wings, could only observe upward without hindrance.

Nevertheless, the order for 1941 provided for the production of 1300 Yakovlev bombers. In addition, they tried to make a dive bomber, a reconnaissance aircraft, an escort fighter out of the aircraft, but none of these ideas worked out. In

February 1941, the BB-22 was taken out of production, stopping at around 201 copies. About 180 vehicles, which were in service with three aviation regiments, took part in the hostilities, all of them were lost a month and a half after the start of the war.

On May 19, 1939, BC Ilyushin rolled out a modification of the DB-3 long-range bomber with M-88 engines for factory testing. The very first flights showed that, due to numerous defects, the propeller unit was unsuitable for operation. Therefore, an aircraft with M-87B engines and lower than dreamed characteristics was submitted for state tests. With a takeoff weight of 7660 kg with 1000 kg of bombs at an altitude of 5400 m, it was possible to reach a speed of 445 km / h, and the maximum range was 3500 km. The machine, as already mentioned, has become more technologically advanced, more convenient to use and noticeably "survivable". In addition to the armored seat of the pilot's seat, they began to book the place of the shooter. Defensive weapons became somewhat more effective (although UltraShkas machine guns were not widely used: they fell apart from their own rate of fire). The upper firing mount was equipped with a shielded MV-3 turret designed by G.M. Mozharovsky and I.V. Venevidova. The turret cap was equipped with aerodynamic expansion joints, balancing the action of the air flow and significantly reducing the effort required to rotate the turret. The lower installation of the MV-2 had a retractable machine gun with a periscope sight, thanks to which the shooter got an overview of the lower part of the rear hemisphere. True, the shooter still remained in the "single copy" (the second was introduced into the state in the second half of 1941). For quite a long time, the Technical Council of the NKAP argued about what type of anti-icing system is preferable - chemical comrade Feigelson or thermal comrade Zuev. As a result, they agreed on the one that they copied from

Ju-88.

The bomber became known as DB-Zf (IL-4).

Two months before the start of state tests, the directors of factories No. 39 and No. 18 received an order to restructure production for technologically new machines and already in the fourth quarter of 1939 to build 870 DB-3s with M-87 and M-88 engines, and from January 1940 years to completely switch to the production of modified machines. The launch of a structurally unfinished bomber with capricious "self-destructive" engines into mass production led to the fact that for six months the aviation industry produced aircraft that were practically unusable. Despite all the tricks of the production workers, the military categorically did not want to accept the "F" car, and on May 7, 1940, the head of the Air Force ordered to completely stop registration and payment for aircraft made by factories No. 39 and No. 18, "as defective." The next day, an order of the NKAP broke out, which, in particular, stated:

"The completely intolerable situation with the implementation of the plan, and, first of all, at the leading plant No. 39, was the result of an irresponsible attitude towards the fulfillment of the state task on the part of the director of the plant, comrade. Zhuravlev and chief designer comrade. Ilyushin. Having transferred the car, which was not finished with fine-tuning, to mass production, the chief designer comrade. Ilyushin extended the refinement of the machine for a very long time, and even at the present time there is no confidence in its complete refinement, since the management of plant No. 39 and the chief designer comrade. Ilyushin still does not have a well-thought-out clear plan for fine-tuning the DB-ZF aircraft. The Board especially noted the failure to fulfill the speed targets set by the government. At the same time, from the side of the chief designer Comrade. Ilyushin and director of the plant comrade. Zhuravlev, no proper measures were taken to speed up the transfer of the DB-ZF aircraft

for state tests.

At the same time, People's Commissar A.I. Shakhurin wrote a report to I.V. Stalin, promising to correct all the shortcomings and submit an "improved model" of the bomber for state tests. Iosif Vissarionovich ordered the People's Commissariat of Defense to temporarily take aircraft "with reduced data" from the factories. However, the authority of S.V. Ilyushin, as Chief Designer, fell in the eyes of the party and military generals. In July 1940, a decision was made to launch a long-range bomber V.G. Ermolaev, in August - to stop the production of M-88 engines. The winter war revealed a whole bunch of "childhood diseases". Pilots Baidukov and Yumashev wrote to Shakhurin:

"During the participation in hostilities on the North-Western Front, the following shortcomings were noticed in the DB-3 aircraft with the M-87, which we operated: On the M-87B engine - completely (destruction of the gearbox in 17 hours, jamming of the shaft in 29 hours, burnout of the piston for 20 hours, sticking of the gas sector due to frosting of the radiator damper, the suction pipe on taxiing is clogged, icing on the blinds, low-quality candles, altimeters lie, oil coolers freeze, engine overheating on the ground and hypothermia at cruising speed). For DB-3 aircraft: 1. Rear centering (longitudinal instability);

2. Gasoline flows from tank to tank, which is unpleasant in a blind flight; 3. Gas tanks of the same group have unequal production; 4. Skis freeze a lot, you need 8-10 people. pump and afterburner when stragging; 5. Gyroscopes from Venturi tubes work very sluggishly even at 220-240 km/h; 6. Venturi tubes fail during icing, and if the autopilot fails, blind flight is impossible; 7. Devices are located badly; 8. Cabin lighting does not allow to see some devices; 9. When the lighting is fully turned on, it reflects on the windshield; 10. The levers of the landing gear, afterburner and propeller are set apart; 11. The afterburner and light step levers are badly locked; 12. Propeller deicers are capricious, distracting the navigator who is rocking; 13. All groups of gas tanks are not provided with neutral gas; 14. When iced, ice breaks through glass

navigator's cabin; 15. When iced, the navigational cabin freezes so much that the curtains stick, and the machine gun does not fire; 16. Tail emplacement does not provide protection; 17. Since they take 4 crew members, an additional oxygen device and a telephone are needed.

The excessive rear centering of the DB-Zf made the aircraft unstable and difficult to pilot, the exhaust gases of the engines entered the cockpit, the bomb bay doors opened by themselves on turns, the OPB-1M sight prevented the navigator from firing from the lower machine gun, the vast majority of aircraft were produced without an autopilot, radio altimeter and radio compass. Hero of the Soviet Union A.I. The youth recalled:

"There is no autopilot on the plane, and by its nature, the IL-4 is unstable, every second it strives to fall into a roll, go off course, lift or lower its nose. You need to constantly turn the steering wheel ... The rumble of motors, the monotonous movements of the steering wheel now to the right, then to the left, on yourself, rocking you away from yourself, downright lull you to sleep. And the pilot seems to be sitting with his eyes open, but he does not see the instruments. His consciousness goes blank for a moment. Sleeping man. This dream lasts a second, maybe two, but then, instantly waking up, it seems to you: you slept for an eternity! And so the hands begin to unconsciously turn the steering wheel, and not always in the right direction ... Everyone knew this well, but they could not withstand the constant tension in long flights. It was beyond physical strength. As far as the attack aircraft was good,

so our bomber, to put it mildly, was not very good. The act, based on the results of the next state tests, which took place in September - October 1940, stated: "The aircraft is lower than Yu-88, Do-215 and North American, and reliability is also lower."

In the end, the fundamental question arose about the combat value of the bomber S.V. Ilyushin and replacing it with something more decent. But it turned out that there was nothing to choose from. In November, the production of the M-88B engines brought to mind was resumed, and all serial DB-Zf began to be equipped with them. Aircraft defects were slowly, but eliminated. It became heavier by almost a ton, so the speed increased slightly and amounted to about 400 km / h at an altitude of 4500 m and 335 km / h near the ground; ceiling - 10,000 m, flight range - 3300 km, maximum bomb load - 2500 kg (1000 kg - on the internal sling). In terms of the totality of parameters, the aircraft was not inferior to most foreign analogues created in the second half of the 30s, it had a high power-to-weight ratio and excellent rate of climb. Another trump card of Ilyushin was the high manufacturability of the machine, thanks to which the DB-Zf / IL-4 was produced until the end of World War II.

Before the war, DB-Zf tried to compete with the "ultra-long" DB-240 (Er-2) - a conversion of the Stal-7 twin-engine passenger aircraft designed by R.L. into a bomb carrier. Bartini with reverse gull wing. After the "fascist spy" was arrested in January 1938, they simply wanted to burn the car, but then changed their minds. On July 29, 1939, by resolution of the Defense Committee No. 227, the terms of reference for a bomber with a maximum speed of 500 km / h, with a flight range of 5000 km were approved in order to be able to bomb Malta or the very lair of the "warmongers" - London - depending on the circumstances. Four 250 kg bombs or the same number of 500 kg land mines were to be placed in the cargo compartment. While only ten FAB-100 or FAB-50 bombs could be hung in the silt fuselage. The work was assigned to OKB-240 under the leadership of V.G. Ermolaev, organized in the system of the Civil Air Fleet.

He had to turn the mixed design into a metal one, retaining the general layout, dimensions, and other parameters, and present the first copy of the machine no later than April 10, 1940. It was planned to achieve outstanding flight data by installing two M-106 engines with an HP 1350 power. However, the M-106 failed to reach the required deadline. Serious operational defects interfered: shaking in transient operating modes, detonation of fuel, lead candles, smoke, oil ejection, and so on, and so on, and so on (with the M-106, which at first had high hopes, they suffered until the end of 1942 ,

then they waved.) The designers had to be content with the less profitable M-105 engine with a takeoff power of 1100 hp. and an altitude of 4000 m. The first flight of

the DB-240 took place on May 14, 1940. The aircraft demonstrated good flight performance, but it did not quite reach the cherished 500 km / h: the "empty" bomber with a take-off weight of 7076 kg developed a maximum flight speed of 473 km / h. Small arms consisted of bow and hatch mounts with 7.62 mm ShKAS machine guns and an upper turret with a 12.7 mm Berezin machine gun. Bombing armament included two external beams with the possibility of hanging bombs of caliber from 100 to 1000 kg. Inside the bomb bay, a pair of cluster bomb racks were mounted for hanging four FAB-250 or FAB-500 bombs, as well as four bomb racks for hanging 12 FAB-50 or FAB-100 bombs. The maximum bomb load is 4000 kg (two FAB-1000s on the outside and four FAB-500s on the internal sling). Crew - 4 people. Based on the peppy reports of Ermolaev and the head of the Main Directorate of the Civil Air Fleet, VS Molokov,

relying on, to put it mildly, slightly rigged reports, without waiting for state tests (they didn't even wait for the end of factory tests), the government decided to deploy mass production of DB-240 at the Voronezh aircraft plant No.-18. The Decree of the Defense Committee of May 29, 1940 ordered the release of 70 bombers in the same year, and in 1941 to build 800 aircraft.

After record-breaking flights to the maximum range, the DB-240 at the end of September 1940 entered the tests at the Air Force Research Institute, during which the military realized that they were slipping not quite what was ordered (which is not surprising, if you remember that more powerful motors were included in the project). In terms of flight speed, the aircraft turned out to be no better than DB-Zf. The ceiling of the "Era" was 7700 m, and the Ilyushin machine easily climbed much higher. The climb time of 5000 m exceeded 30 minutes, the Il-4 had 17.5 minutes. Only the flight range and the capacity of the bomb bay singled out the Ermolaevsky bomber for the better, but with a full bomb and fuel load, it could hardly get off the ground. Moreover, for the takeoff of a 13-ton machine, a concrete strip with a length of at least 1200 m was required. The report of the chief engineer of the Air Force, Lieutenant General Repin, noted a long list of technical shortcomings of the aircraft, the main of which were: insufficient longitudinal and lateral stability, too heavy control, unreliable operation of brakes and bomb releasers, discrepancy between the size of the wheels of the main landing gear and the flight weight of the aircraft, lack of tread on gas tanks, overheating of oil and water, cracked exhaust manifolds. Due to the lack of large-caliber BT machine guns, another ShKAS had to be installed in the upper mount. Meanwhile, Plant No. 18, overcoming difficulties and "bottlenecks", mastered the production of a series, rolling out machines unsuitable for operation from the shops.

In November 1940, V.G. Ermolaev received an order to convert his bomber to AM-35A, AM-37 liquid-cooled engines and M-40F aviation diesel engines. Urgently. This was followed by the decision of the government to stop the production of Yer-2 with M-105 engines. The machines that were already ready and still "on the slipway" were ordered, after eliminating the defects, aggravated by the "extremely careless and hasty assembly of the aircraft", to be transferred to the troops with a take-off weight limit of 12,000 kg. However, months passed, and it was not possible to push the "eras" from the territory of the plant into the troops. The first copies of the Air Force were accepted only in June 1941, the seventieth - in September. By the beginning of the war, none of the "new type" bombers had entered service with combat units. In the end, two TVA regiments were formed, equipped at the beginning of August with 60 vehicles. Their assessment by crew members can be judged from the report of the commissar of the 420th regiment, senior political officer Dokalenko: *"The flight crew expresses a certain mood regarding the reliability of the materiel. Pilots and navigators say that it would be good to transfer them to another type of aviation."* The flight crew can be understood: as of August 13, 1941, two

of brand new aircraft crashed, six more were burned in the air due to spontaneous combustion of engines, two crews were killed in full force, ten people were burned. By this time, the Soviet leadership had completely lost interest in the ultra-long-range bomber. Design Bureau Ermolaev, wandering in the evacuation from factory to factory, did not manage to bring his car to a state suitable for a mass series. With the AM-37 engine, five

aircraft were produced, with the AM-35 - only one. Starting from 1944, plant No. 39, which moved to Irkutsk, produced small batches of five-seater "eras" with ACh-30B diesel engines. During the entire war, combat units of long-range aviation received about two hundred "unusable aircraft" Yer-2. After the arrest of

Tupolev and Petlyakov, after the arrest of Tupolev and Petlyakov, I.N. I won't. It was clear to the entire Soviet Air Force that the plane was damn good, and it was planned to have 250 of these machines in service in 1940. Almost simultaneously, it was decided to install new A.A. engines on the aircraft instead of the AM-34FRN. Mikulin AM-35 with 1350 hp takeoff power. An increase in engine performance was achieved through the use of a centrifugal supercharger with rotary blades and four carburetors instead of one.

Since 1939, TB-7 began to be mass-produced at plant No. 124. Literally immediately after the assembly of the first "case", it turned out that the production of the "highlight" of the project - the ACN-2 central pressurization unit was not established anywhere. This circumstance put an end to the idea of a high-altitude strategic bomber.

Only four aircraft were produced from the ACN and twelve without it. The flight range of a 32-ton machine reached 4,700 km, the maximum bomb load was 4,000 kg, and the speed at an altitude of 6,400-443 km / h. The aircraft had exceptionally powerful armament: two turrets with a ShVAK cannon, two shooting points with a Berezin machine gun in the tail section of the engine nacelles, a turret with two ShKAS machine guns for firing forward. There were also designed gas tanks, armored plates and armored backs protecting pilots and shooters. The maximum flight altitude of the TB-7 (without ACN-2) was 9300 meters, while the Bf-109E climbed 10,500 meters and flew much faster. In this regard, the question

naturally arose whether the country needed an expensive bomb carrier that was not able to independently overcome the air defense zone, but there was still no long-range fighter available. There was also this opinion:

"Some prominent leaders of the country considered it a mistake to create high-speed heavy bombers that would be able to strike at enemy military plants in the deep rear. In their opinion, this could quarrel the USSR with the international proletariat, which in the event of war must necessarily stand up for the world's first state of workers and

peasants."

In May 1940, the wise Soviet government decided to continue the production of TB-7 with the latest 12-cylinder aviation diesel engines M-30 and M-40. Both motors were descended from the AN-1, designed by A.D. Charomsky, had the same dimensions, four two-stage turbochargers each, did not have driven superchargers, had similar technical characteristics and were generally very similar. Only the M-30 was made in a "sharashka" at the plant No. 82 by convict A.D. Charomsky, and M-40 - in the wild, at the Kirov Plant, V.M. Yakovlev. The disadvantages of these motors were also the same: they consumed oil in buckets, vibrated strongly, at an altitude of more than 4000 m they suddenly "self-switched off" and did not want to turn on again, bearings and other "extra parts" sometimes spilled out of the turbochargers. Approximately every third diesel engine failed without serving even 10 hours. These problems surfaced in the troops already in the process of operation, they had to change diesel engines back to AM-35A carburetors.

By this time, Western designers, who were the first to develop

high-speed diesel engines and putting them on aircraft, realized for themselves the futility of the direction: with existing materials, such engines will always be either overweight or have an insufficient resource. Only in the USSR, albeit in small batches, they continued to produce expensive scrap metal.

As a result, there was nothing to replace the TB-3. The decision to remove the clumsy slug from service was never implemented. On the contrary, in February 1941, a decree "On the reorganization of the aviation forces of the Red Army" was issued, which ordered the formation of five more TB-3 regiments, which were supposed to be used both as bombers and as military transport aircraft. Aircraft TB-7 (Pe-8) produced

only 79 copies. By the beginning of the war, exactly seven bombers entered the troops, their number at the front never exceeded a dozen cars, they were used at night, they could not play a special role; in 1941, they extremely unsuccessfully took part in symbolic raids on Berlin - it was then that the defects of the power plant, which they turned a blind eye during tests, backfired, in 1944 they were considered unsuitable for the same task due to vulnerability to modern air defense systems. When Stalin needed a carrier for a nuclear bomb, he ordered to exactly "copy" the American "Superfortress".

Thus, the main Soviet long-range bomber and naval torpedo bomber throughout the war was and remained the DB-Z / Il-4, which was replicated in the amount of 6883 pieces until 1945.

The issue of creating a dive bomber in the USSR was considered as early as 1934, but it did not come to a head right away. At the beginning of 1936, HH Polikarpov, on his own initiative, began to develop a high-speed multi-purpose aircraft (SVB, MPI-1, VIT-1) with two M-103 engines, capable of reconnaissance and air combat, dive bombing and performing the function of an "air fighter tanks." The scheme is an all-metal low-wing aircraft, designed for a twelvefold overload. The armament consisted of two "onboard" 37 mm K-37 Shpitalny cannons in the center section, one 20 mm ShVAK cannon in the nose of the fuselage, one ShKAS on the rear turret, two 500 kg bombs on the external sling and up to 600 kg on the internal sling. There was no booking. The report noted:

"To judge the combat power of an aircraft, it is enough to say that, for example, the fire power of an automatic weapon located in the nose of this aircraft is more than ten times the power of fire of the most powerful fighter in service with our Air Force ... Until now, neither have we in the USSR, nor in foreign armies, there was no means of combat intended for active action against large tank formations. This task is solved by the air tank destroyer (VIT) proposed by us."

On tests of the two-seat VIT-1, which took place in October 1937, a speed of 494 km / h and a flight range of 1000 km were achieved. As a result, it was decided to put more powerful engines on the aircraft and make some changes to the design.

VIT-2, tested in the fall of 1938, differed from the "dad" in a spaced tail, some changes in contours, M-105 engines, new propellers and the presence of a third crew member. The maximum speed reached 513 km / h at an altitude of 4500 m and 446 km / h at the ground. From a dive, bombs could only be dropped from an external sling. "The flight qualities were outstanding", in terms of piloting technique, the aircraft was accessible to a pilot of average qualification, and, in general, there was nothing like it in the USSR at that time. The general impression was spoiled only by the low reliability of the "raw" M-105 engine, its fine-tuning in the bureau of V.Ya. Klimov dragged on for a year and a half. In August 1939, it was decided to put the B IT-2 into production at the plant number-22 in Fili in the version of a dive bomber, which was given the name SPB. The first copy was by the beginning of 1940. He showed a speed of 520 km / h. Armament was not so intimidating

("anti-tank" faded into the background): aft UB machine gun and ShKAS machine gun in the navigator's cockpit, 800 kg of bombs in the fuselage and 700 kg outside.

On April 14, 1940, a draft design of a single-engine single-seat dive bomber (OPB) with an M-90 star-shaped engine was presented to the customer by OKB S.A. Kocherigin, on May 20, a layout was presented, which was approved by an authoritative commission. The dive bomber was a single-seat low-wing mixed design with a reverse gull wing. A bomb weighing 500 kg was hidden in the fuselage and dropped using a parallelogram mechanism that brought it out of the propeller disk. Under the wing there were two holders that provided the suspension of two bombs of the FAB-250 type. Small arms consisted of four synchronous machine guns: two BS and two ShKAS. With an aircraft flight weight of 3800 kg, it was supposed to obtain a speed of 600 km / h at an altitude of 7000 m, the maximum range - 1100 km. OPB Kocherigin is strikingly reminiscent of an improved version of the German "thing" that managed to become famous. Yes, and the parallelogram mechanism was copied from it. In conclusion on the project, the head of the GUAS KA division commander P.A. Alekseev noted: "The experience of recent combat operations clearly confirms the need to have a dive bomber of this class in the Air Force, since this aircraft combines high speed with the possibility of aimed bombing at fortified points with bombs of great destructive power weighing 500 kg, allowing bombing in the reloading version. armament of 700 kg. According to its scheme and design, the OPB aircraft is close to the family of fighter aircraft, and therefore can be used after the end of the main combat mission of bombing as an air combat aircraft. Despite the great interest from the Air Force, work on the OPB unfolded slowly, mainly due to the lack of the M-90 engine and the workload of plant No. 156, where the S.A. team worked. Kocherigin, priority orders of the

NKVD. The designer redesigned his project for the AM-37 engine, but it was discontinued. All this stuff dragged on until the middle of 1942, after which Kocherigin was pushed to the post of editor-in-chief of the BNT NKAP. The Soviet analogue of the "thing" never appeared. However, there was plenty to choose from ... Work on improving the SB bomber, after the defeat of the Tupolev Design Bureau, was entrusted to A.A. Arkhangelsk. He had to carry out a deep modernization of the aircraft in order to

teach it to dive and fly at a speed of 500 km / h, or better - 600 km / h.

In October 1940, factory tests of an experimental bomber SB-PK (Ar-2) began with M-105R engines (takeoff power 1100 hp) and "ennobled" aerodynamics. It was equipped with an overload limiter, a dive recovery machine, special bomb racks PB-3, which ensured the safe exit of an aerial bomb from the bomb bay, and lattice aerodynamic brakes "like Ju-88". The aircraft, with a normal flight weight of 6650 kg at an altitude of 4700 m, developed a speed of 480 km / h, cruising speed was 320 km / h, flight range - 1500 km, ceiling - 10,000 m. The run length with a takeoff weight of 7100 kg was 340 m. The time to climb 5000 m was 7.1 minutes.

The maximum bomb load increased to 1500 kg, normal - 1000 kg. Moreover, all one and a half tons of "payload" could be dropped both from level flight and from a dive, both from internal and from wing bomb racks. The possibility of carrying large-caliber bombs was increased, for example, it was possible to take on board three FAB-500s, or four FAB-250s, or twelve FAB-100s, or four containers for 1200 kg of chemical warfare agents. The plane steadily dived at a speed of 550 km/h at angles up to 75 degrees. Defensive small arms still consisted of four ShKAS machine guns in standard configuration.

The conclusions of the report on the results of state tests, which ended in January 1941, noted: *"The Ar-2 aircraft, manufactured on the basis of the SB aircraft. in terms of its flight performance, it is much better than the serial SB aircraft, but in terms of*

speed lags behind modern foreign and domestic twin-engine medium bombers ... The flight properties of the Ar-2 aircraft are similar to those of the SB aircraft, and the control of the aircraft is even easier. In terms of controllability and visibility for the pilot, the aircraft is convenient for piloting in formation." In addition, the

"arches" were among the first to be equipped with fiber-protected gas tanks instead of welded metal ones, which significantly increased the "fire resistance" of the machines. I must say that the Soviet Union has been working on the problem of preventing the ignition of fuel tanks when bullets hit them since 1936, there was even a special design bureau, but no matter what it came up with, "the goal was not achieved." The fiber tank design, introduced into mass production just before the war, is another "Hitler's gift." In February 1941, after finalizing and eliminating

comments on the work of the propeller group, the Ar-2 managed to obtain a maximum speed near the ground of 443 km / h and 512 km / h at an altitude of 5000 m. By the end of the year, it was planned to release 1000 aircraft.

A group of inmates under the leadership of the former director of the TsAGI experimental design plant, and now an ordinary convict V.M. Petlyakova, by April 1940, made, as ordered, a high-altitude fighter-interceptor "100" with two M-105 engines and a double pressurized cabin. On May 1, the plane took part in the parade on Red Square and, they say, liked the beloved Politburo. In the evening, in the prison bedroom, trying not to make noise and not to wake the guards, bored at home, engineers rocked Petlyakov. The "enemies of the people" rejoiced early. Military comrades, assessing the capabilities of potential opponents, noticed that they did not have any high-altitude bombers, respectively, and there was nothing to "intercept high-altitude". Petlyakov was offered to convert a fighter that had become unnecessary into a high-speed dive bomber in a month and a half. The rush began again: leaving the airframe unchanged, they removed the pressurized cabin, high-altitude equipment and turbochargers from the car, moved the pilot's seat forward, and brought in a third crew member. Working drawings were immediately transferred to plant number 22 for mass production, which began on June 23, 1940. A prototype was not built. The official state tests of the machine, which received the name Pe-2, passed six months later.

With an aircraft takeoff weight of 7536 kg, a maximum speed of 540 km / h was reached at an altitude of 5100 m, the flight range was 1200 km, the ceiling was 8700 m. The pilot was protected by an armored back 9 mm thick. Armament consisted of four ShKAS machine guns. Inside the fuselage there was a bomb bay for four FAB-100s, on the external sling - four FAB-250s. The normal bomb load was 600 kg, with an overload - 1000 kg. From a dive, only external sling bombs could be dropped, since there were no devices for removing bombs from the fuselage. Moreover, the "dive" itself had to be planned before the flight: in this case, the entire combat load was hung on external bomb racks. The largest bomb that the Pe-2 could take was the FAB-500.

As a reward, the Petlyakists were allowed to spend the night at home, leaving, however, to work

in the NKVD system. A team of "pests" led by A.N. Tupolev worked for almost a year on the project of the diving giant PB with four M-105 engines. Academician A.I. Nekrasov estimated the trajectory of a steeply diving aircraft and the behavior of a bomb separating from it and: "It turned out that due to the presence of lift, the aircraft seemed to be removed from the bomb. In motion relative to the aircraft, the center of gravity of the bomb departs at an angle of 60–65 degrees to the aircraft's construction axis.

And that's it! No forced mechanism to remove the bomb is needed: "This meant that if a bevel of 65 degrees was given on the front wall of the bomb bay, and on the bomb locks the ears of the bombs were to go forward at an angle of 65 degrees, then the bomb could be dropped from the compartment on a dive in the same way just like in level flight.

Prison engineer G.S. Frenkel designed the PFB periscope sight

(PBP-1), which provided high accuracy of dive bombing.

The PB project was ready in September 1939. However, in the early spring of 1940, the efforts of the Tupolev team were refocused on the creation of a high-speed twin-engine dive bomber with M-120 engines equipped with TK-2 turbochargers. Developed by V.Ya. Klimov, the promising 18-cylinder M-120 engine structurally consisted of three M-105 blocks located in a star at an angle of 120 degrees. An increase in the number of cylinders theoretically made it possible to increase power to 1800 hp. s on takeoff and 1500 "horses" at an altitude of 6000 m. Then the estimated speed of the FB was 700-740 km / h at an altitude of 12,000 m (without turbochargers - 650-670 km / h), the maximum bomb load - 2000 kg at a range of 1000 km and a bomb load of 1000 kg with a maximum range of 2500 km. The crew was supposed to consist of three people, armament - from two "onboard" ShVAK cannons in the center section and four ShKAS machine guns. To improve visibility, the cockpit was placed in the bow, and at the bottom there was a long window that allowed you to see forward and down at angles up to 75 degrees to the horizon. Protected tanks, a neutral gas system, seat reservations were provided. Officially, the design of the aircraft began on March 1, 1940. And at the beginning of the

summer, all Tupolev residents in absentia, without an "unreasonable" summons to court presence, were sentenced to 10 years in labor camps and 5 years of disqualification. So that they don't relax. Personally, ANT, as the leader, was given fifteen years of "correction" plus five "by the horns". The first flight of the aircraft "103" took place on January 29, 1941. From the very beginning it

was clear that the bomber was "successful and significantly superior to the Pe-2 in terms of speed, bomb load, defensive armament and ease of piloting." In June - July, the machine passed state tests and demonstrated outstanding performance: with a normal takeoff weight of 10,990 kg, a speed of 640 km / h was achieved while maintaining the rest of the ordered parameters of range, altitude, and bomb load. Instead of the Klimov M-120 engines, it was necessary to install the Mikulin AM-37s with 1400 hp, since the refinement of the three-block engine progressed slowly and with great difficulty. For several years, it was not possible to reach the specified levels of power and engine reliability. In 1942, work on the M-120 was stopped. Do not wait and turbochargers. The act of the commission noted: "The 103 aircraft, which has the speed of a modern fighter aircraft and has passed the first stage of state tests, is recommended for

construction as a multi-purpose aircraft capable of performing the tasks of a bomber and fighter, for which its cannon armament and armor protection should be strengthened." The YuZU variant, which took off on May 18, 1941, according to the wishes of the customer, was made four-seater - a navigator's seat appeared slightly behind and to the right of the pilot, equipped

with a suspension for 10 PC-132 rockets and one more rear firing point. The speed became 610 km / h at an altitude of 7800 m, the range - 1900 km. It was this aircraft that was recognized as meeting all the requirements and recommended for serial construction, which was planned to be deployed at plant No. 18 in order to produce 1000 aircraft in 1942. In short, by 1941 the People's Commissariat and the Air Force had plenty to choose from. The Polikarpov SPB was preparing for serial production, flying at a speed

520 km / h and lifting 1500 kg of bombs on the internal and external sling.

There was a "semi-piloted" Pe-2 bomber, which, due to its fighter origin, had a high speed - 540 km / h - a large margin of safety and excellent maneuverability. For the same reason, the aircraft could carry a rather modest load for its size - only 600 kg (1000 kg in overload) and had poor takeoff and landing qualities. The largest bomb that the Pe-2 could take,

was FAB-500.

There was also a SB modification - a full-fledged Ar-2 dive bomber, with already established production, well mastered by pilots, with a maximum speed of 512 km / h and carrying 1500 kg of bombs. The promising

Tu-2 was made in metal - the best front-line bomber in the world, with a speed of 610 km / h, powerful machine-gun and cannon weapons, capable of taking on board 2000 kg of bomb cargo (in overload it could carry three FAB-1000), fully adapted for bombing both from a dive (slow or high-speed), and from level flight.

A comparative assessment of the combat effectiveness of these machines shows that when solving the task of destroying small targets, the Ar-2 aircraft was 1.4 times superior to the Pe-2 and the German Ju-88A-4 of the 1940 model by 1.3 times. When working on areas, the Ar-2 was better than the Petlyakov, but 1.3 times inferior to the Junkers, although it flew slower, but lifted up to 3000 kg of payload and had from five to seven MG18 and MG131 machine guns as defensive weapons. The SPB was slightly inferior to the Pe-2 in terms of maximum speed, but it was superior in rate of climb and took more bombs. The magnificent Tu-2 was out of competition, but the Red Army did not receive it.

By that time, the chief designer of plant No. 1 HH Polikarpov fell out of favor, his design bureau - the second largest in the country - was deprived of funding, and then destroyed, there was no production base, young, toothy competitors stepped on the heels, M-105 engines continuously failed, and experimental machines that have successfully completed dozens of flights suddenly began to suffer disasters one after another:

"I could not get out of a spin and died on April 27, 1940, test pilot P.G. Golovin. On the second aircraft, a wing flutter occurred during a dive, the wing and the entire aircraft crumbled in the air. The pilot M.A. was killed. Lipkin, who unnecessarily vigorously increased the speed of the dive in each subsequent flight. On the third plane, the rudder trimmer flew off, but the pilot B.N. Kudrin managed to land the plane and survive. The pilot refused to fly on the fourth plane.

July 29, 1940 People's Commissar A.I. Shakhurin ordered to stop further tests of the SPB, write off all the costs of its creation as losses. Launch

the brainchild of A.N. Tupolev in Voronezh was prevented by the war and the evacuation of the enterprise to the east. Then the AM-37 engine was discontinued in favor of the mass production of the AM-39 for the Il-2 attack aircraft. The bomber was converted for ASh-82 engines, plant No. 166 was built for it in Omsk, where by the spring of 1942 a series was established and 80 aircraft were built. After that, in the month of October, by order of the Stavka, work on the bomber was curtailed and Yakovlev fighters began to be produced. As a result, the Tu-2 began to arrive at the front only at the beginning of 1944. Piece per day. "Built in insufficient quantities," writes enemy general Walter Schwabedissen, "the Tu-2 bomber could not have a significant impact on the course of the air war."

The final choice was made on February 11, 1941, when, by a decision of the Defense Committee, the production of the Ar-2 was discontinued in favor of the mass production of the Pe-2, which is being deployed at factories No. 22 and No. 125. "Arochek" managed to make 198 pieces.

Pe-2 became the main front-line bomber of the Workers' and Peasants' Red Air Fleet. In the spring of 1941, "pawns" began to enter combat units. By the beginning of the war, the Air Force received 458 aircraft.

In 1939–1940, Polikarpov's aircraft continued to be the main fighters of the Soviet Air Force. Their production in connection with the plans to "doubling", on the one hand, and the lack of new models, on the other, even increased in 1940: 2210 I-16 fighters and 2362 "seagulls" were produced. In the competition for the best fighter

at the call of the Leader of the Peoples took part

collectives P.D. Grushina, S.G. Kozlova, S.A. Lavochkina, M.M. Pashinin, HH Polikarpov, AB Silvansky, P.O. Sukhoi, V.K. Tairova, I.F. Florova, V.V. Shevchenko, A.S. Yakovleva, V.P. Yatsenko. In the special prison, V.M. Petlyakov and D.L. Tomashevich.

Serial engineers of the Gorky plant No. 21 I.F. Florov and A.A. Borovkov began work on the creation of an original biplane fighter with fixed landing gear as early as 1935. The conceived aircraft was supposed to have both the properties of high-speed monoplanes and maneuverable biplanes. To resolve these conflicting requirements, we settled on a biplane scheme with the same cantilever wings of traditional struts and braces. The M-85 engine was used as a power plant. The result is a very compact — length 6.34 m, wingspan 6.98 m — an aerodynamically clean airplane with a heavily shifted back cockpit. Armament was provided from four ShKAS machine guns. The prototype was approved for state testing in June 1937, but crashed on its first flight. The unexpected success of the Polikarpov I-15 in Spain fueled the military's waning interest in biplanes. As a result of the investigation of the disaster, the director and chief engineer of the plant were arrested, and the designers were offered to continue working on the basis of the airship plant No. 207. The new I-207 fighter with the M-62 engine was tested in June 1939, but did not show any advantages in comparison with the serial I-153. The variant with retractable landing gear and the M-63 engine - takeoff weight 1879 kg - at an altitude of 5000 m developed a speed of 486 km / h, performed a turn in 17 seconds, but at the beginning of 1940 these figures did not impress anyone.

V.P. Yatsenko, one of the oldest aircraft designers in the country, who previously worked at the Polikarpov Design Bureau, in April 1939 brought the I-28 fighter for testing - a wooden low-wing aircraft with a small reverse seagull in the wing-to-fuselage connection - "this was the beginning of a course towards the use of wood in conditions of shortage of duralumin". The aircraft was built for an 18-cylinder M-90 engine with a power of 1700 hp, which gave an estimated speed of 600 km/h. However, due to the lack of such, they installed the M-87 in 950 "horses". With him, the car was able to develop 545 km / h. The armament was supposed to be very powerful: two 12.7-mm ShVAK machine guns and two ShKAS machine guns, or a ShVAK cannon and two BS machine guns. At state tests, the I-28 received high marks: "Of the best fighters, it flies well, it is very pleasant to pilot, it sits tightly in the air ... at present it is the first high-speed fighter in the USSR." The tests continued, and the aircraft was already intended to be put into serial production: Saratov Plant No. 292 was instructed to stop building the R-10 reconnaissance aircraft and produce 30 copies of the I-28 with the M-88 engine. Only five managed to be produced, in June 1940 all work on the aircraft was stopped - Yatsenko (not the aircraft) could not stand the competition.

HH Polikarpov in 1938 worked on the I-180 monoplane fighter with a maximum speed of 600 km / h, which was supposed to replace the I-16 in the troops. Moreover, it was supposed to be produced on a truly Stalinist scale. According to V.B. Shavrov, I-180 "was designed and built as a mass fighter for those one and a half hundred thousand pilots who were to be released in the coming years according to the put forward slogan." The aircraft also repeated the prototype according

to the scheme, which made it easier for combatant pilots to master it, but had a slightly larger size, power and much better flight performance. The technology also differed little from the I-16, which promised a painless introduction into production. However, the car (and the designer) was fatally unlucky. In the very first test flight on December 15, 1938, the company's chief pilot, the legendary pilot Valery Chkalov, who entered the highest Kremlin offices, mysteriously died. Four months later, the famous test pilot Thomas Susi crashed on the second copy of the fighter. No malfunctions were found, it was suggested that the pilot died in the air from sudden cardiac arrest. Third option with engine

M-88R 1000 hp was ditched due to the fault of the pilot. Nevertheless, the I-180, which in all respects surpassed the German Bf-109E, in July 1939 was decided to be put into production at the Gorky plant No. 21. The aircraft, weighing 2675 kg, with the M-88R engine, developed a maximum speed of 585 km / h, had a flight range of 900 km, a ceiling of over 110,000 m. The armament consisted of two ShKAS machine guns and two BS heavy machine guns, assembled in one battery and firing synchronously between the top cylinders of the engine. By the summer of 1939, HH Polikarpov drafted a high-altitude fighter I-200 ("K") for the promising AM-37 liquid-cooled engine with an estimated speed of about 700 km / h at an altitude of 7000 m. But, since both the Mikulin engine and turbochargers continued looming in the future, in the fall, Nikolai Nikolayevich began to draw a fundamentally new three-gun fighter I-185 with a two-row star of much greater power, with a sharp increase in the specific load on the wing: "The design was new, very technologically advanced and adapted for mass production, without concessions to the traditions of factories."

The story of the I-220 (IS) fighter looks like a perfect anecdote. In February 1938 M.M. Kaganovich, on the basis of the Novosibirsk Plant No. 153, created an design bureau for his son-in-law A.V. Silvansky. The backbone of the team was made up of employees of the aircraft designer D.P. Grigorovich. In order to accelerate the creative process in every possible way, the aircraft project, by order of the people's commissar, from HH Polikarpov "requisitioned" a variant of a deep modification of the "donkey" - TsKB-25 with a double-row star "Mistral-Major", which over the years turned into M-88.

However, the 22-year-old precocious talent who got into the stream, possessing the necessary ambition to the full and even having the audacity to challenge the "king of fighters" to the socialist competition, showed absolute ignorance in everything related to aviation itself - "it was difficult to distinguish the wing console from the cook screw". Introduced in September 1939 for testing, the "aircraft of its own design" touched the ground with a propeller on takeoff. By order of Silvansky, the propeller blades were cut with hacksaws, but even after the "cutting", the apparatus, painted in proletarian red, diligently puffed, smoked, but refused to take off. Nevertheless, having obtained a new propeller, it was brought to Moscow to be pushed into serial production. The joint commission of TsAGI and the Air Force Research Institute

drew up an act stating that the aircraft was quite presentable and, after the elimination of certain shortcomings, would be ready "for release for the first flights." In February 1940, test pilot E.G. Ulyakhin with great difficulty managed to lift the I-220 off the ground and climb 200 meters, after which he somehow returned "to his native land" and announced that "you can't fly on this shit." By this time, the high-ranking father-in-law had left the ministerial chair, and by the summer, Silvansky's shop was finally closed. A student of HH Polikarpov, his former deputy M.M. Pashinin in 1937 became the chief designer of plant No. 21,

which mass-produced donkeys. Pashinin followed the path of Polikarpov, having carried out a deep modernization of the I-16, but instead of the "star", he decided to install an in-line M-107 engine with a capacity of 1650 hp on his version of the fighter. With it, the maximum speed at an altitude of 7000 m could theoretically exceed 680 km / h. The engine - a common thing - did not arrive on time, but even with the M-105 engine, with a take-off weight of 2670 kg, the experimental I-21 in July 1940 demonstrated a speed of 573 km / h. The armament consisted of a 23 mm motor gun and two ShKAS synchronous machine guns. In terms of speed, rate of climb and armament, the aircraft was superior to the notorious "Messer". In addition, 60% of the parts and assemblies of the Pashinin fighter were similar to the I-16 assemblies, which ensured the trouble-free introduction of the machine into a series at the same plant. Representatives of the Air Force noted the lack of stability in flight and too high a landing speed. The shortcomings, quite understandable for the experimental model, were removable and were eliminated by the beginning of 1941. But in terms of timing, Pashinin was late for the distribution of prizes: by order of the NKAP dated February 10, 1941, plant No. 21 was identified as the lead plant for the production of the LaGG fighter.

The chief designer of plant No. 135 P.O. also tried to solve the problem set by the Defense Committee. Dry. It should be noted that the Air Force Directorate required that all new fighters be exclusively high-altitude and equipped with turbochargers. Most designers ignored the requirement due to the complete unsuitability of the TK-2 for practical use. But not dry. In June 1940, he presented the I-135 (Su-1) high-altitude fighter with the M-105P engine. The tests continued until the spring of 1941, and eventually the turbochargers were removed from the aircraft. The result was a machine that, in terms of performance characteristics, slightly exceeded the year as adopted by the Yak-1 and did not receive a continuation. The chronicler of the Tupolev sharashka Kerber wrote: "The credo of Pavel Osipovich is this: "When I make a car, I fulfill

all the requirements of the customer. Further, it is not my business, if such a machine is needed, let the ministry and factories organize its production. I am a constructor, not a dispatcher, not an organizer, not a pusher." The result was always the same - good aircraft were built in unique copies, but they did not go into series. One example of the "infantility" of the designer Sukhoi was the I-135.

For many aircraft, the path to the sky was blocked by the lack of powerful and reliable engines. The designers over and over again redrawn the drawings for new promising engines that were about to enter service: M-64, M-70, M-71, M-81, M-89, M-90, M-106, M-107, M-110, M-120... but when you turn it on it doesn't work.

On May 14, 1940, the command of the Red Army Air Force reported to the Central Committee of the All-Union Communist Party of Bolsheviks:

"The main brake in the development of our aircraft is the engine. Here our backwardness from the advanced capitalist countries is very great. Motors M-63, M-88, M-105, which enter serial production with a large number of defects, are unreliable in flight, often fail, the life of these motors is very short ... Until now, we do not have a good propeller ... We ask the Central Committee for b) urgently take measures to improve our engines and propellers, otherwise the speeds of our aircraft in the near future may lag even further behind foreign ones.

Soviet scientific thought, based on the work of "serf scientists", still remained in the position of "catching up". It could not be otherwise in a country in which the party bosses were considered the main specialists "in improving motors and propellers", and indeed in solving any problems. There were two more or less decent new water-

cooled "engines" in the USSR - the Klimovsky M-105 (weight 600 kg, takeoff power 1100 hp) and Mikulinsky AM-35A (weight 830 kg, takeoff power 1350 hp).), air-cooled - 14-cylinder double-row star design bureau Shvetsov M-82 (weight 850 kg, takeoff power 1700 hp). Moreover, they all suffered from many "childhood diseases" and required painstaking refinement. Soviet engine builders were limited not only by the lack of fresh ideas, but also by the low quality of domestic gasoline. The domestic petrochemical industry was not able to obtain high-octane gasolines in the required quantities, and where "foreign" designers managed to increase the compression ratio, our "Kulibins" had to use large cylinder volumes, which led to an increase in engine weight and a decrease in its specific power characteristics. So, at the beginning of 1941, a modification of the Messerschmitt Bf-109F-2, equipped with a new DB 601N engine (weight 700 kg, takeoff power 1215 hp), began to enter service with the Luftwaffe fighter groups. As a

result of an increase in the compression ratio from 6.9 to 8.2 and the use of SZ gasoline with an octane rating of 96 instead of 87-octane B4, this engine developed 1270 hp in a 1-minute combat mode, which gave the aircraft a noticeable increase in speed (up to 605 km / h at an altitude of 5000 m) and rate of climb. The latest Bf-109E series were also equipped with the same engines, which became 30 km / h "faster" as a result.

Pilot Plant No.-115 KB A.S. Yakovlev began to implement an order for a high-speed fighter in May 1939. According to the tactical and technical requirements of the Air Force, it was necessary to build two prototypes with the M-106 engine with a maximum speed of 620-650 km / h, a flight range of 600 km, an altitude of at least 11,000 m, armament - one BS and two ShKAS. The second copy was distinguished by the presence of turbochargers and the absence of a heavy machine gun. The project was created by the leading designer K.V. Sinelytsikov and the chief designer of the plant K.A. Vigantom. The

first copy of the I-26 was rolled out for factory testing in January 1940. The motor had to be supplied with an M-105P with a power of 1100 hp, but a 20-mm cannon fit in the collapse of the cylinder block. The aircraft had excellent aerodynamic shapes, a rational layout, was quite easy to pilot for a mass pilot, unpretentious in maintenance, but turned out to be overweight and with insufficient overall strength. During the passage of factory tests on April 27, 1940,

the chief pilot of the firm Yu.I. Piontkovsky. The second prototype reached a speed of 590 km / h and at the end of May was submitted for state tests, which did not successfully pass, or rather, was not even accepted for testing due to the lack of weapons, the propeller group (the engine, by the way, put into series, overheated and spat oil, the ignition system and candles regularly failed) and the lack of equipment required for the fighter. The third prototype of the I-26, significantly improved (300 changes were made to the design, including copying the wing and control stick from the Non-100, the cockpit, the tail wheel stopper, other rubbish, such as hood locks and hatches that opened without the help of a tool, and system of explanatory inscriptions - with Mf-109E), was presented in October and received a satisfactory assessment. The car was still "raw", had many defects, but these are details, since the fighter A.S. Yakovlev was accepted into service even before the start of

state tests. "It was clear to everyone," Shavrov explains, "that the plane was good, but there was no time for doubt." The military series was ordered in February, the first production aircraft was assembled even before the death of Piontkovsky, and in May 1940, the production of I-26-N (Yak-1) began to be deployed at three plants at once - No. 126, 301 and 292, in the future factories No. 130 and No. 83, which were under construction, were to join them. The design was promising, in terms of piloting technique, the fighter turned out to be much simpler than the I-16, the flight crew was easily retrained for a new type of aircraft.

Yak-1 became the ancestor of a whole family of "yaks" of various types and modifications. The aircraft had a takeoff weight of 2,950 kg, a maximum speed of 570 km/h at an altitude of 5,000 m, a range of 650 km, and a service ceiling of 10,000 m. Armament consisted of a ShVAK cannon and two ShKAS synchronous machine guns. There was no radio equipment. In reality, the mass production of "yaks" by 1941 could only be established by Saratov Plant No. 292, which produced this type of aircraft until the middle of summer 1944. Until June 22, 1941, 425 Yak-1 fighters were built.

The history of the world-famous "Lavka" began frivolously and with a "frivolous" aircraft. Sensing the wind of change, one aviation official, head of the aircraft department of the People's Commissariat of Defense Industry V.P. Gorbunov, suggested to another official - S.A. Lavochkin - to go to the Politburo with a proposal to build a high-speed cannon fighter with a water-cooled engine. For the sake of truth, both officials were qualified designers who had a good practical school. Sketch Lavochkin "drew" in a week. On the way to the office of People's Commissar M.M. Kaganovich, friends picked up M.I. Gudkov. The highlight of the project was that, in accordance with the decision of the party to build aircraft technologically simpler and cheaper, the fighter was supposed to be all-wood, instead of duralumin, it was planned to use the know-how of engineer L.I. Ryzhkov - delta wood chipboard-10 - plywood obtained by hot pressing of birch veneer,

impregnated with resin glue VIAM-B-3. Kaganovich liked the idea, and the Kuntsevsky Plant of Aviation Propellers and Skis was assigned to the designers, and in May 1939, Plant No. 301 in Khimki. It was a furniture factory designed to furnish the building of the Palace of Soviets. The I-301 aircraft, according

to the decree, was designed in two versions: a high-altitude fighter with an M-105 engine and a TK-2 turbocharger (set speed of 675 km / h at an altitude of 9000 m, a ceiling of 9000 m) and a front-line fighter with an M-106 engine (speed 600–625 km/h for 7000 m and a ceiling of 11,000 m). Range - 600 km. Like all other competitors, Lavochkin and his comrades had to be content with the M-105P.

The I-301, covered with dark cherry varnish and polished to a mirror shine, made its first flight on March 30, 1940, and in June it was submitted for state tests. The features of the new technology led to the fact that the aircraft turned out to be heavy: empty, it weighed 2970 kg - more than the "full" Yak-1. In addition, the military demanded an increase in flight range to 1000 km, and two additional fuel tanks had to be placed in the wings. Nevertheless, the prototype (it was not polished in vain) at an altitude of 5000 m was able to accelerate to 605 km / h. The armament was powerful, consisting of a 23-mm MP-6 cannon designed by L. G. Taubin and two synchronous 12.7-mm BS machine guns. Due to numerous shortcomings, the "piano" did not pass the state tests and "quite logically" on June 29 was recommended for launch in a series. On October 10, the government decided to launch the LaGG-3 fighter into mass production at five factories; the plan for 1941 was to produce 2960 machines. Serial, unpolished, devices developed a speed of 575 km / h and instead of a motor-gun they carried a Berezin machine gun, since Taubin was exposed as a "pest", arrested and shot. Together with him, the "saboteur gun" was withdrawn from circulation. Before the start of the war with Germany, 322 aircraft were produced. A.I. Mikoyan and M.I. Gurevich started last in the fighter race,

but finished in the top three. The design bureau "for maneuverable fighters" was born on December 8, 1939. Designer A.I. Mikoyan, who managed to graduate with honors from the Air Force Academy with primary education, was "born" nine months earlier, when the young specialist was appointed head of the brigade of plant No. 1. And already on April 5, 1940, the I-200 fighter took off. Give ist fantastic! One of the historians of the Soviet era writes:

"It is more difficult for Mikoyan and Gurevich. MiG-1 is their first car. However, it was created on time, absolutely fantastic - in a few months. One of the reasons for the success is the help of the serial plant, where the newborn design bureau is located. This is one of the oldest Soviet aircraft factories. True, Polikarpov worked on the same territory, but the fighter of Mikoyan and Gurevich completely won the hearts of both ordinary engineers and plant managers. In general: "The old, established design bureaus (*for example, Polikarpova*), who had extensive experience, were left behind. And the young ones burst forward ... The generation of thirty-five-year-olds, concentrated in newborn design bureaus, won an unconditional victory in the field of fighter aviation. The secret of this miracle,

in fact, is simple and banal: Artem Mikoyan was the brother of the permanent member of the Politburo Anastas Mikoyan, the one who "from Ilyich to Ilyich without a heart attack and paralysis." From this it is clear how the non-existent fighter "undividedly won" the hearts of the plant managers. The second component of success was a primitive robbery. In November 1939, the chief designer of the plant, HH Polikarpov, was in Germany as part of a delegation when work began on "pre-draft design of the I-200 aircraft." The essence of the work was to withdraw the drawings of the Polikarpov high-altitude fighter with the AM-37 engine.

On December 8, the preliminary "Mikoyan project" was ready. On the same day, by order of M.M. Kaganovich, KB-1 and the Experimental Design Department were formed, which included more than 80 of the best engineers of the Polikarpov Design Bureau, including M.I. Gurevich -

leading specialist in "product" K ". When Polikarpov returned from a business trip, he no longer had a design bureau or a production base.

The process of building a prototype I-200 took place simultaneously with preparations for mass production. Without waiting for the end of factory tests, on May 25, 1940, the fighter was officially put into production at factory number 1. Before the end of the year, it was ordered to hand over 125 MiG-1 aircraft, stopping the production of BB-22 short-range bombers. In 1941, it was planned to release 3600 MiGs. Polikarpov, on the other hand, was given a bonus and with the remnants of the destroyed "old design bureau" so that they would not loom "in the same territory" as Mikoyan, they took the hangar on the edge of the Khodynka field and called it plant No. 51. And let him say thank you for not being shot. MiG-1 was

a cantilever low-wing mixed design. With the AM-35A engine, the aircraft developed a maximum speed of 628 km / h at an altitude of 7000 m. In general, at altitudes of more than 5000 m, it outperformed all fighters in the world in speed. Take-off weight - 3319 kg, practical flight range - 580 km, ceiling - 12,000 m. Armament consisted of two synchronous ShKAS machine guns and one 12.7-mm BS machine gun, since the design of the motor did not allow installing a cannon firing through the propeller hub. Two FAB-50s or FAB-100s could be hung on bomb racks. The main modification - MiG-3 - was distinguished by the presence of an additional gas tank and a neutral gas system.

It is important that the MiGs were made at the most powerful plant in the country, using the most modern equipment, using the most advanced technologies and skilled labor: "It can be noted that the repair qualities of the MiG-3 were exceptional. Interchangeability was well secured. It was easy to assemble one whole from two or three broken aircraft. The plane was very technologically advanced and remained in service for a long time ... "As a result, it turned out to be the only fighter that passed state tests the first time. Before the start of the war with Germany, the troops received 950 MiGs. At the end of 1940, the production of Polikarpov machines was stopped,

the aircraft industry was completely focused on new designs that won the competition for the Stalin prize: plant No. 1 began to produce MiG-3, plants No. 292 and No. Shops of plant number-21 instead of I-180 rolled out sparkling varnish LaGGi. In accordance with the world "fashion" and an eye on the Messerschmitt-109, which became the star, they were all equipped with water-cooled in-line engines. The next project of Polikarpov was buried, including due to the defectiveness of the M-88 engine, which was never really finished. At that time, air-cooled engines, giving significant drag, were considered unpromising, unable to provide a sharp increase in speed. I-180, having released 13 copies, was removed from the series, and at the top there was an opinion that "Polikarpov was exhausted." Therefore, the swan song of the designer I-185 - the best Soviet fighter of the war period - was expected by an unfortunate fate.

Only in March 1940 did the factory tests of the experimental attack aircraft TsKB-55 with the AM-35 engine end. The aircraft, built in the Ilyushin Design Bureau, was a two-seater. The nose was an armored box included in the power circuit of the fuselage, the thickness of the armor was 4–7 mm. The total weight of the reservation is about 700 kg, with a total take-off weight of the aircraft 4735 kg. The tail section was made of wood and plywood. The speed near the ground turned out to be 362 km / h, the flight range was 618 km. The armament consisted of four ShKAS wing-mounted machine guns with 650 rounds of ammunition each, one "stern" machine gun in the rear of the cockpit, and 400 kg of bombs. Aiming during bombing was carried out by the navigator-gunner using the OPB-1 sight. The performance characteristics of the vehicle turned out to be lower than those ordered by the military, they demanded a more powerful and reliable engine, strengthen the armament, increase the speed and range, and equip the vehicle with a transceiver radio station.

In October 1940, he made the first flight of the TsKB-57 of a similar design, but single-seat and with a low-altitude AM-38 engine with a power of 1600 hp. Due to the elimination of the shooter's place, a gas tank was added, the thickness of the rear armor was increased to 12 mm, and the RSI-3 radio station was mounted. Two ShKAS machine guns were replaced with 20 mm ShVAK cannons and eight RS-82 shells were added. The aircraft weighed 5300 kg and developed a speed of 423 km/h near the ground, and 437 km/h at the altitude limit. In December, the NKAP issued an order to launch the attack aircraft, which received the name **Il-2**, into mass production. The introduction of the aircraft at the factories took place simultaneously with state tests. The flight weight of serial copies, which were manufactured much more clumsily than the representative head machines, reached 5800 kg, speed - 380 km / h at the ground and up to 410 km / h at an altitude of 25

In May-June 1941, the first Il-2s began to enter the Air Force combat units. Back to top war managed to build 249 aircraft.

Another question: what did the Motherland not receive? For example, a modern reconnaissance

aircraft. Reconnaissance aviation in the USSR was frankly neglected, as not quite "combat". In the speech of People's Commissar of Defense K.E. Voroshilov at the XVIII Congress of the CPSU (b) in March 1939, it was said as a great achievement that over the past five years "... reconnaissance aviation has halved." As a result, the materiel of the Soviet reconnaissance aviation turned out to be the most backward by the beginning of the war. On June 22, 1941, in combat aviation units located on the territory of the border military districts, there were 57 R-10 aircraft and 342 copies of various modifications of the R-5 biplane. Some of these machines, as noted in the Air Force reports, were "in dilapidated condition", which is not surprising, given the fact that the service life of wooden structures stored in the winter and summer in the open air did not exceed four years. In addition, SB bombers were supposed to be used as reconnaissance aircraft and there were two reconnaissance aviation regiments on brand new Yak-2 and Yak-4-84 aircraft and 26 crews who could fly them. In total, there were seven reconnaissance regiments on the western border, equipped with 38% of the staff.

The need for a long-range escort fighter was clearly understood, but it was not possible to make it. Before the war itself, several machines of this type were tested at once. Unlike the Bf-110, they were single-seat. The Grushin Gr-1 heavy fighter with two AM-37 liquid-cooled engines with a take-off weight of 7650 kg had a flight range of 1890 km, a fully armored cockpit; armament: four ShKAS machine guns and two ShVAK cannons. Armored fighter V.K. Tairov Ta-3 with two M-89 air-cooled engines with a take-off weight of 6626 kg had a range of more than 2000 km and was armed with four ShVAK guns. Long-range fighter Mikoyan and Gurevich DIS-200 (Mig-5) with two AM-37 weighed 7605 kg, the range was assumed to be 2280 km. The car was supposed to be launched into a series at plant No. 1, curtailing the production of MiG-1 for the sake of such a necessary thing. Armament: one 37 mm cannon, two 12.7 mm BS machine guns and four ShKAS. Under the AM-37 HH engines, Polikarpov built a two-seat heavy TIS fighter with extremely powerful weapons: a bow battery of four ShKAS, two ShVAK

cannons in the center section, one ShKAS back-up and one ShKAS back-down. The mass of a second salvo is 5.12 kg. However, neither the AM-37 nor the M-89 were ever put into production. Under the I-29 escort fighter with two ShVAK guns, designer Yakovlev tried to adapt his restless B-22 aircraft, but,

as indicated in the reference book, "it was built, but almost did not fly."

Meanwhile, the Battle of England confirmed that without a long-range fighter, a long-range bomber was useless. Having failed to implement the Pe-8 project, the country also lost strategic aviation, which seemed to be in the

mid-1930s. As for the front-line bomber, V.B. Shavrov wrote on this subject: "In general,

throughout the war, until the advent of the Tu-2, we did not have a large-scale day bomber with a decent bomb load. Excessive enthusiasm for speed went to the detriment of the main fighting qualities. Meanwhile, the most important advantage of a bomber is the ability to inflict maximum damage on the enemy - the size of the bomb load, the ability to accurately hit targets, the effectiveness and destructive power of aviation ammunition. The Tu-2 was somewhat late, to the husband, in 1944 it was produced without brake bars and the OPB sight - non-dive.

That is why Schwabedissen pointed out that the material part of the Soviet bomber aviation "did not fully correspond to the conditions of modern warfare": "This was one of the reasons why the results of the activities of the Soviet bomber aviation turned out to be limited." Modern researchers came to the same conclusion: "On the eve of the war, the

combat composition and armament of the attack aircraft of the Air Force of the Spacecraft turned out to be generally inappropriate to the nature and conditions of hostilities. Since the beginning of the war, this circumstance, combined with the insufficient level of combat training of the flight personnel of the units and the operational-tactical training of the command staff of aviation formations and headquarters, as well as the leadership of the Air Force and the Red Army, led to the low effectiveness of air support for their troops and heavy losses from enemy fire ". Speaking to his colleagues after a business trip to Germany, HH Polikarpov

made one key point:

"It seems to us that the most valuable thing is that the German General Staff and the leadership of the German Air Force comprehended the experience of the war in Spain, created for themselves a certain doctrine of warfare and outlined the armament system for their air forces, and they have worked this out so seriously that they do not think any changes soon. Weaving certainty in military views creates certainty in work

designers.

On the basis of the developed war doctrine, the types of aircraft that want to develop and build the German General Staff and the Air Force have clearly outlined.

At the same time, in the USSR in the pre-war period, serious research was not carried out at all to find the optimal forms and methods for the combat use of aviation in modern warfare. As a result, work on determining the optimal directions for the development of aviation and analyzing the combat effectiveness of aircraft of various types did not receive due attention. Accordingly, the appearance was not determined - flight performance data and the design scheme of the aircraft, the number of engines, the composition of the crew, the composition of the weapons and the layout of its placement, the required size of the ammunition load - of promising combat vehicles, recommendations were not developed for improving the aircraft already in service. Therefore, the designers "invented" their machines, based on their own

understanding and experience.

"Practically all A.N. Tupolev, - Yeager recalls, - began to be developed at the Design Bureau and were "invented" by Tupolev and his assistants, and not according to standard technology, when it was assumed that the military in their departments and Air Force institutes create "tactical requirements", transfer them to industry and accompany development..."

The lack of a reasonable concept for the construction of the Red Army Air Force led to the fact that neither the military, nor the leadership of the country and the NKAP had a clear and precise understanding of what kind of combat aircraft, in what quantity and in what proportion it was necessary to equip the Air Force. Most importantly, there was no unity of views on all these issues. As a result, when making decisions on the creation of a new generation of combat aircraft, as well as on setting

into service or decommissioning of this or that aircraft, only some indicators were taken into account and compared, characterizing separately the flight and separately combat qualities of machines - speed, or altitude, or range. In fact, all decisions were made blindly and for the most part without taking into account the specific combat situation in which the vehicles and pilots would find themselves. In May 1940, in the Act of accepting cases for the People's Commissariat of Defense, Marshal S. K. Timoshenko

pointed out:

"The material part of the Red Army Air Force in its development lags behind in terms of speed, engine power, armament and aircraft durability from the aviation of the advanced armies of other countries. The People's Commissariat of Defense (Department of the Air Force) did not show sufficient initiative and perseverance in introducing more modern types of aircraft. The Directorate of the Air Force did not determine the direction of development of military aviation, but adapted to the People's Commissariat of the aviation industry. For this reason, the Air Force does not have dive bombers and is lagging behind in the introduction of modern types. aircraft."

Eternal haste...

Leapfrog of appointments and relocations... An avalanche of decisions and resolutions that contradict each other... Couriers, couriers... A mass of wasted energy and resources... Wasted time... Somehow, having exhausted all the nerves in one of the bureaucratic offices, Polikarpov threw out in his hearts: "They can at least complain to Goering, but we have no one." Nikolai Nikolaevich, of course, got excited. When it turned out that the sole decision of the Supreme Commander-in-Chief to curtail the production of the Tu-2 bomber turned out to be erroneous and there was no one to blame for this mistake, Comrade Stalin called Shakhurin to him and said: "And yet you did wrong. You should have complained about me to the Central Committee." True, no one has ever attempted such a feat. On the other hand, a case is reliably known when Comrade Stalin "complained" to the Central Committee about Shakhurin:

"Checking the work of the Air Force and the complaints of pilots from the front about the poor quality of our aircraft led to the conclusion that the former Commissar of the aviation industry Shakhurin, who handed over aircraft for the front, then the former chief engineer of the Air Force Repin and his subordinate Seleznev, who received aircraft from Shakhurin for the front, were in collusion with each other in order to accept low-quality aircraft from Shakhurin, passing them off as benign, to deceive the government in this way and then receive rewards for "fulfilling" and "over-fulfilling" the plan. This criminal activity of the persons named above lasted about two years and led to the death of our pilots at the front ... Thus, the crimes continued, the front received low-quality aircraft, accidents followed accidents and our pilots paid for it with their blood.

Needless to say, the appeal had an effect. On June 22, 1941, the "time allotted to us by history" ended. True, Hitler had three times less of it. On the eve of the invasion of the Soviet Union, the Air Force of the Third Reich had 6852 aircraft. This is ridiculously small, considering that in September 1940, Soviet "analysts", when compiling "Considerations on the Fundamentals of the Strategic Deployment of the Armed Forces", counted from Germany "from 14,200 to 15,000 aircraft, of which 4,500-5,000 bombers, 3,500-4,000 fighters, 400-600 scouts, 3000

transport "and predicted that, taking into account Hitler's potential allies, which included Finland, Romania and Hungary, 15,100 aircraft.

In fact, in the German "air armada" allocated to participate in the operation "Barbarossa", there were 3909 aircraft of various types and for various purposes. For example, there were 313 transport workers and 326 communications aircraft. Of the remaining 3270 combat vehicles, 786 were scouts.

Then there were 965 fighters (approximately equal Bf-109E and Bf-109F), 102 fighter-bombers (Bf-110), 952 bombers and 456 dive bombers - a **total of 2484 "serious aircraft"**. Each army group received one air fleet. The Sever group

was supported by the 1st Air Fleet - 830 aircraft, including 203 fighters and 271 bombers. The actions of Army Group Center were provided by the 2nd Air Fleet, it was the most powerful of all -

1712 aircraft, including 384 fighters, 299 bombers, 98 fighter-bombers and 425 dive bombers. To support the South group, the 4th Air Fleet was allocated - 1199 aircraft, including 366 fighters and 360 bombers. Finally, the 5th Air Fleet was stationed in

Northern Norway - 117 aircraft, including 78 fighters and bombers. If we talk about the Nazi allies, then on June 22 they did not participate in the

"treacherous attack" and did not smash the "peacefully sleeping airfields", although later they nevertheless entered the war and threw up another 880

aircraft. In general, this is everything. And we were told that "the German crushed the technique." The peace-loving and gullible Stalin, as they wrote in Soviet annals, had only 1,540 "new types of combat aircraft." What is already untrue:

there were 2363 combat units in the Armed Forces of the USSR of new types of aircraft. In addition, "a significant number of machines of obsolete designs" were in service. By the beginning of the war, the Soviet Air Force, according to the data given in Statistical Collection No. 1, had 24,488 aircraft, including 18,759 combat aircraft, including 6,877 bombers, 9,881 fighters, and 1,934 reconnaissance **aircraft**. A statistical study of the Russian

General Staff in the column "Was in service" on 06/22/1941 gives a figure of **20,000** combat aircraft: 8,400 bombers and 11,500 fighters. 8920 military vehicles (of which 7675 were operational), including 5421 fighters, stood guard over the borders with Europe. By districts, it looked like this: Leningrad Military District - 1342 aircraft, including 902 fighters and 394 bombers. Baltic Special Military District - 1344 aircraft, including 744 fighters and 453 bombers. Western Special Military District - 1812 aircraft,

including 1043 fighters and 489 bombers. Kiev Special Military District - 2059 aircraft, including 1341 fighters and 466

bombers. Odessa Military District - 1071 aircraft, including 687 fighters and 287 bombers. In addition, 1769 aircraft (1506 serviceable) were

part of the aviation of the Baltic, Black Sea, Northern fleets and the Pinsk flotilla. In addition, 2300 combat vehicles

were part of the five corps of the High Command Aviation. With the exception of the 5th Far Eastern Corps, they were

deployed on the territory of special districts, on the Novgorod-Smolensk-Kursk line.

- Zhytomyr - Zaporozhye.

So, "on the lands" of the KOVO the 1st and 2nd long-range bomber corps were based - 4 bomber and 2 fighter divisions - 1080 aircraft. In the first three days of mobilization, 8 aviation divisions were supposed to arrive in the district, therefore, in June 1941, drawing up a "Note for the defense period according to the mobilization plan", General M.P. Kirponos expected to have 6,760 aircraft on his Southwestern Front.

We can safely say that the Motherland had something. To be more precise, on June 22, 1941, in the Western theater of operations, a five-fold quantitative superiority of the Soviet Air Force over the enemy in fighters, and two-fold in bombers (excluding ADD) was observed. Most of the "new types" of aircraft were also located here: 957 Mig-1 and Mig-3 fighters, 102 Yak-1 fighters (that is, in total the same as all German ones), 205 Pe-2 bombers, 133 Ar-2 dive bombers, 209 Su-2 multipurpose aircraft and 18 Il-2 attack aircraft. In fact, more, since the data in the Statistical Book are given as of June 1. It goes without saying that only the notorious "new types"

are suitable for war, and everything else is unfit for combat, non-flying, non-shooting, incapable of causing damage to the enemy trash. Which is just stupidity. Just from the latest aircraft in 1941, there was the least sense. These

precocious designs, created in a furious race, with unfinished engines, taken into service in advance, have not yet really taken to the wing. In addition, the rapid expansion of production and emergency development in the series led to a decrease in the quality of vehicles and a sharp increase in the number of accidents and disasters in military units - 4-5 daily! It was during this period that the head of the Main Directorate of the Air Force P.V. Rychagov, according to the legend, told Stalin to his face: "You are forcing us to fly on coffins!"

The very first sorties of the pilots of the assault aviation regiments on a combat mission revealed a number of serious defects in the Il-2 attack aircraft. Under the conditions of field airfields, insufficient chassis strength was revealed, which led to frequent aircraft breakdowns, and sometimes disasters. The fuel supply on the aircraft was found to be inadequate for the required range, especially against targets in the tactical depth of the enemy. When firing, the guns gave continuous delays due to the lack of knowledge of the pneumatic reloading system and transverse ruptures of the cartridge cases in the chamber. And most importantly, the combat effectiveness of the "battlefield aircraft" was minimal.

On the one hand, its armament did not correspond to the tasks of delivering powerful strikes against motorized infantry and tank columns, enemy airfields, infantry and vehicle concentrations.

The ShVAK gun, as we remember, was obtained by "re-barrelling" a heavy machine gun of a similar design. The projectile for this gun had to be made thick and "blunt-headed" in order to fit into the automatic machine gun, which means not to go beyond the length of the standard 12.7-mm cartridge. The disadvantages of such a "modernization" were revealed quite soon: a weak destructive effect when firing at all-metal aircraft due to the small mass of the projectile and the meager amount of explosive in it; a rapid decrease in the speed of the projectile on the trajectory due to unsatisfactory aerodynamic shape (this increased the time of the projectile approaching the target and the probability of hitting it). In addition, Ilyushin in a hurry chose the path of "least resistance" and placed the guns in place of the "extreme" ShKAS machine guns, which led to aiming errors and increased dispersion of shells due to insufficient wing rigidity. Tests carried out in the summer of 1942 showed that the ShVAK gun did not penetrate the armor of even light German tanks, its maximum capabilities were at an angle close to normal, from a distance of no more than 250–300 m, to make a "hole" in 15-mm armor. According to the test results, it was recommended: "Il-2 aircraft armed with ShVAK cannons are inefficient to use against tanks, but it is better to use them 5–10 km in the rear against infantry and fuel supplying tanks."

High-explosive bombs were dropped by eye: the PBP-1 sight only blocked the view, was useless when shooting and bombing at ultra-low altitudes, and during a rough landing, the pilot banged his head on this device. For this reason, in parts, the sight was dismantled and

handed over to the warehouse.

On the other hand, the "air HF" variant did not work out, the "flying tank" turned out to be quite vulnerable. The armored

box reliably protected only from rifle-caliber bullets, and all German fighters had already switched to cannon armament. The tail part of the fuselage was wooden, "and it even happened that the tail almost broke off, literally cut by a machine-gun burst." On the IL-2 of the first series, there was no armor protection on top of the pilot's head, engine and rear gas tank, as well as a "stern" firing point, which, in the absence of fighter cover - and it was usually absent - made it defenseless from attacks from behind, led to huge losses of vehicles and flight personnel. Effective weapons against low-flying aircraft were German rapid-fire anti-aircraft guns of 20 mm and 37 mm caliber. In July - September 1941, the attack aircraft died on the 8-9th sortie.

The Mig-3 fighter was the favorite of the fighter competition - everything coincided here: Polikarpov's talent, a powerful production base, and the name Mikoyan. The fact that at high altitudes the plane flew faster than anyone warmed the soul. Sources emphasize that he is the only one of the competitors who passed the state tests the first time. And this is understandable. People's Commissar Shakhurin recalls: "As soon as one of the designers reported:" Comrade Stalin, Filin slows down the testing of my fighter, makes all sorts of claims, "and a sharp turn took place in the fate of Filin." There is nowhere cooler: on May 23, 1941, the head of the Air Force Research Institute, Major General A.I. Filin was arrested, tried by a military tribunal, and then shot as a participant in an anti-Soviet conspiracy. In addition, the chief of staff of the Air Force Research Institute, as well as many heads of departments and leading engineers, were removed from their posts as inappropriate for their official position. All of them were accused of wrecking and slowing down the introduction of new aviation technology. The order stated that the tests of new aircraft, including the MiG-3, were carried out incorrectly, while their flight data were deliberately underestimated. All those who remained at large instantly understood the "general line of the party":

they carried out the tests "correctly", or immediately "introduced new aviation equipment", postponing the tests for later. General N.S. Shimanov at the post-war interrogation testified: "Instead of reporting to the People's Commissar of Defense that the planes were falling apart in the air, we sat at meetings and wrote schedules for eliminating defects on planes." After the war, when it was time to calculate the "price of victory" and it turned out that non-combat losses in aviation amounted to 60,300 aircraft (56.7%), the "general line" ran in the opposite direction. Those who were responsible for the production of aircraft and those who took them into service were charged with criminal activity, which consisted in the "systematic production of defective aircraft and aircraft engines" and "dragging" them into service with the Red Army air units:

"The former People's Commissar of the Aviation Industry SHAKHURIN, in pursuit of digital indicators for the implementation of the plan, systematically violating government decisions, launched into mass production aircraft and engines that had major design flaws. Along with this, through the fault of SHAKHURIN, aircraft and engines that did not pass state and military tests were launched into mass production. In the process of production itself, there were cases of violations of the technological process and poor-quality performance of work ... as a result of which a large number of accidents and disasters occurred in aviation units, pilots died, and many defective aircraft accumulated that could not be used in battles with the Germans.

In the spring of 1946, the fate of Alexei Ivanovich also "took a sharp turn": his were stripped of all awards and imprisoned for seven years.

Already in the troops it turned out that the newest fighter is a natural "bucket of parts" In

the spring of 1941, a serious defect was discovered in the AM-35A engine: the failure of the electromechanical control of the Stechkin-Polikovsky blades. A number of disasters occurred in the combat units, including those due to the fault of the motor. For about a month, the entire Mig-3 armada stood motionless on the ground until they found a "treatment" method: the blade control was replaced with a mechanical one. Since April, retraining of pilots has resumed in parts, it was not only about the blades.

From the memorandum of the head of the 3rd department of the ZapOVO P.G. Begma to the Secretary of the Central Committee of the CP(b)B P.K. Ponomarenko dated June 17, 1941:

"Fighter Aviation Regiments of the 9th Mixed Aviation Division - 41, 124, 126 and 129 received 240 MIG-1 and MIG-3 aircraft for rearmament.

In the process of mastering the MIG-1-MIG-3 aircraft by the flight crew, as of 12.6.41, 53 flight accidents occurred. As a result of these incidents, 10 aircraft were completely destroyed and cannot be repaired, 5 require factory repairs, the rest require major repairs in aviation workshops. A total of 53 aircraft were disabled. Over 100 aircraft are temporarily unserviceable due to various

factory defects in the aircraft and engine. Thus, at present, all regiments of the 9th mixed air division have 85-90 serviceable aircraft for 20 pilots flying on MIG-1 and MIG-3 aircraft.

Recently, cases of flight accidents on MIG-1-MIG-3 aircraft due to the fault of the material part of the aircraft and weapons have become more frequent. In just 10 days of June, for this reason, 30 flight accidents occurred in parts of the division ...

From June 1 to June 10, 1941, in the 126th and 129th air regiments, 6 engine accidents occurred due to factory defects, the defects have not yet been definitely established. Engine accidents occurred in the air, as a result of which 1 aircraft crashed, 2 aircraft crashed and 3 aircraft broke down ... The causes of the accidents have not yet been established, but there is an assumption by experts that the AM-35 engines have weak connecting rods, poor-quality fuel, due to which can be detonation, as well as poor-quality lubrication of engine parts.

Shortcomings in the armament of the new material part of the MIG-1 and MIG-3 aircraft.

When shooting machine guns in April-May of this year. most machine guns did not shoot at all for various factory defects. On several aircraft, there are cases of failure of machine gun synchronizers, which led to arbitrary and non-synchronous firing ...

The main reason for the shooting of the propeller blades is: the failure of the shank and shaft of the internal gear lever of the synchronizer, due to the design and technological shortcomings of the synchronizer of plant No. 24, the details of which cannot withstand the load that occurs during the firing of the BS machine gun.

According to the conclusion of the commission, chaired by the engineer-inspector for armaments of the ZapOVO Brodov, it was established that it was dangerous to make changes in the design of the BS machine

gun firing synchronizer. At this stage of the development of the MIG-1-MIG-3 aircraft, it has already formed a certain opinion of the flight crew about the flight performance of this aircraft. One of

the best and most experienced fighter pilots (he has been flying fighters for 11 years) of the ZapOVO Air Force, who has mastered the MIG-3 aircraft for combat use, the commander of the 124th fighter regiment, Major Polunin, says: "The MIG-1-MIG-3 aircraft can be used as an interceptor in flight qualities. The high horizontal speed of the aircraft makes it possible to fight against the enemy aircraft in pursuit and during interception. Group dogfight due to

Insufficient maneuverability of the aircraft is difficult to maintain, for example, in almost one coup through the wing, the aircraft loses heights of 700-600 meters. Aerobatic flight requires great attention, because at the slightest uncoordinated actions of the pilot, the aircraft immediately breaks into a tailspin, and the recovery from the spin is difficult and this will require a lot of altitude. On landing, the aircraft does not tolerate even the slightest pilot errors in piloting technique. The plane is supported only by the engine, and the power of the AM-35-a engine is insufficient for this aircraft.

The AM-35-a motor has a number of defects that need to be fixed. After 8-10 hours of engine operation on take-off, the candles fail, the engine, for reasons still unclear, interrupts and reduces power. Such a motor only reinforces the distrust of the flight crew in the aircraft ... The aircraft must be lightened. The experience of mastering and performing tasks for combat use shows that the MIG-1-MIG-3 aircraft is designed for a pilot who has an I-1bne piloting technique rating below "good". It is difficult for an average pilot to master the technique of piloting a MIG-1-MIG-3 aircraft and not without risk to his life.

The complexity of piloting the MIG-1-MIG-3 aircraft and the presence of manufacturing defects in it cause distrust of the aircraft, on the basis of which even old experienced fighter pilots are afraid to fly them. The commander

of the 9th mixed air division, Major General Chernykh, flew on a MIG-1 in March, made two landings (1 landing bordered on a breakdown) and after that he did not fly a single time.

Major Oleinikov, inspector of fighter aviation piloting equipment of the District Air Force, flew out and made 3 landings on a MIG-1 aircraft in March of this year, after which he did not fly on a MIG-1-MIG-3 aircraft. In a conversation with the flight crew, Oleinikov said: "I will wait for the Yak aircraft or some other."

(The 9th mixed aviation division was at the very edge of one of the "crushing counterattacks" against East Prussia - in the Bialystok ledge. It remained there, losing, according to official data, 347 aircraft on the first day of the war. Major General S.A. Chernykh was arrested and shot). In addition to "childhood illnesses"

and factory defects, the MiGs also had a number of design flaws: "The disadvantage of the MiG-1 was unsatisfactory stability due to rear centering. The plane easily went into a spin and did not get out of it. Pilot fatigue was greater than on other aircraft. In the MiG-3, these and other shortcomings were largely eliminated, but some of its properties could not be overcome. The landing speed was high, at least 144 km / h, maneuverability was insufficient at low altitudes, the turn radius was large. "Mig" was difficult to pilot, especially when landing: a long and heavy "bomber" engine worsened visibility from the cockpit and longitudinal controllability. Lieutenant General G.N. Zakharov, who commanded the 43rd Fighter Aviation Division, recalled: "Mig" was

too heavy for a fighter. He did not forgive mistakes during piloting, he was designed only for a good pilot. The average pilot on the "flash" automatically passed into the category of the weak, and even the weak simply could not fly on it. And this is in comparison with the I-16, which was considered a "strict aircraft." Finally, contrary to theoretical assumptions, the high-altitude "flash" could not be used as a front-line fighter, since at

altitudes up to 5000 m, where, as a rule, air battles took place, it was inferior to enemy vehicles in its flying qualities, and at high altitudes the Germans could not fight wished. Enemy bombers, solving the tasks of air support for ground forces, worked from a dive or decreased to increase the accuracy of the strike. The fighters covering them did the same. So the main events took place in the altitude range of 1000-4000 m, where the MiGs, which gave maximum speed at an altitude of 7800 m, could not realize their potentially magnificent capabilities. In addition, according to the observations of the enemy: "These aircraft easily caught fire when fired from all angles."

In November 1941, a decision was made to curtail the production of the MiG-3 (stopped at 3220 units) and the AM-35A engine, the remaining vehicles were transferred to the air defense system, where they were used as a night fighter-interceptor. There were practically no LaGG-3s in the Air

Force of the western districts; in tangible quantities they began to arrive at the front already in July. For a fighter, the aircraft was heavy and clumsy in control, had an insufficient maximum flight speed, the value of which, moreover, decreased from series to series due to the deterioration of technological discipline at the factories and the increase in weight due to the installation of an armored back, two additional fuel tanks, a radio station. The quality of the finish of the external surfaces of the airframe has sharply decreased, resulting in an increase in drag. Compared to the prototype, the maximum speed dropped from 603 km/h to 535 km/h, and the rate of climb almost halved, from 850 to 588 m/min. On a dive, the car vibrated strongly, on bends it lost altitude, fell into a tailspin. Not everything was all right with Klimov's engines. They continued to "spit" oil, and so successfully - at the sight and the cockpit lantern, which was already so cloudy that the pilots of the "hawks" preferred to fly with open cockpits (losing another 20-40 km / h in speed). There were enough defects in the fighter's hydraulic system, the landing gear would break by itself: "A pilot comes to the car in the morning, and

she is on her knees.

On the other hand, the aircraft turned out to be durable, with sufficiently strong weapons and exceptionally tenacious, it was almost impossible to set fire to it - thanks to the use of delta wood and equipment with a system for filling fuel tanks with neutral gas. Design and technological flaws were gradually eliminated, the LaGG-3 was produced in large quantities, in the first period of the war it was one of the main types of front-line fighters. For the better, according to the flight crew, the Yak-1 was different, capable of fighting all types of German aircraft. The fighter was

relatively light, technologically advanced, with good aerodynamics, as they said then, "cultural", was unpretentious in maintenance, distinguished by ease of piloting and good handling. He, too, was not devoid of design and technological flaws. The main one was a fuel leak from the tanks, oil overheating and similar problems with the M-105P engine. There were also weak design of the pedals, the failure of the tail wheel tire, the mass removal of screws securing the hatches of the gas tanks, poor visibility of the gas gauges and other shortcomings. As with other types of machines, due to moisture ingress, the plywood sheathing warped and peeled off. The plane did not have a radio station, a fuel gauge, an ammunition counter, and a system for "neutralizing" gas tanks (also located in the wings) - as veterans recall: the Yak was on fire,

like a candle."

In short, all our "newest" fighters in 1941 were inferior to the "Messerschmitt" (as they will be inferior to him almost the entire war). It seems that they almost caught up with Emil in terms of flight characteristics, but the main German fighter was already the Bf-109F with a maximum speed of 620 km / h at an altitude of 5000 m, a rate of climb of 1300 m / min, armed with a 20-mm MG151 / 20 motor cannon with a pace firing 800 rounds / min and two synchronous machine guns MG17. Luftwaffe fighters were technically more advanced, had better vertical maneuverability, had high aerobatic qualities, in other words, they were more suitable for destroying aircraft in the air. The technical backwardness of Soviet aircraft was due, first of all, to the low quality of domestic engines and the lack of modern on-board equipment, a number of instruments and automatic devices that facilitated the work of the pilot. Thus, the Messer automation regulated the temperature regime of the engine, the quality and quantity of the fuel mixture, boost pressure, and propeller pitch. "Hans" simply moved the gas sector, increasing or decreasing engine speed, and the rest was done by automation, providing the optimal mode of the propeller group,

unloading the pilot, allowing him to pay more attention to the air situation and assess the rapidly changing situation. "Ivan" did everything manually, forgetting in the heat of battle to switch one or another lever, losing meters, seconds, life to the enemy. From the technical description of the Yak-1 fighter: "Motor control consists of controlling the gas sector, altitude correctors, supercharger drive speeds, propeller regulator and oil injector. All cable management; control cables for normal gas, high-altitude correctors and switching supercharger speeds are laid in 6x8 mm tubes stuffed with grease ... ". German engines were also 25–30% more economical

Soviet.

Each German aircraft was equipped with a transceiver radio station, while the vast majority of Soviet fighters did not install a radio station at all, and then only every 15th aircraft was equipped with transmitters, the rest - only with receivers. Hitler's generals did not even think of an airplane without a radio station, Stalin's - they thought in unison with the Chief Aircraft Designer, who personally decided when, where and what to put. As a result, the control of a group of Soviet fighters in air combat was impossible in principle. The GKO decree on equipping all newly produced fighters with radio stations appeared only on August 20, 1942. After that, it was still necessary to teach and, according to General M.N. Zakharov, even to force the pilots to use a walkie-talkie: "The pilots are so used to the fact that they do not hear anything, that the very information coming through the sound channels, and not through the visual ones, interfered with them, unbalanced, crushed their attention. Not so much a technical as a psychological transition of pilots to the continuous use of radio communications in the air was not immediately and not simply carried out, and this restructuring cost all aviation commanders a lot of work. But this happened - in the middle, rather even in the second half of the forty-three.

The German planes, made entirely of duralumin, did not swell the putty, the plywood did not lag behind after rains, and the wings did not fall off after an energetic maneuver. The build quality and operational reliability of Soviet aircraft deteriorated even more after the men left for the front, and instead of them, teenagers and women without special training came to the factories. "When I flew to the Kazan plant to receive planes," recalled the

"pawn" pilot Timofey Punev, "I walked around the shops, then, to be honest, I freaked out. Such a master stands at the lathe, and there are two boxes under his feet, otherwise he will not reach the lathe. The boys are chronically hungry. If a dove flew into the workshop, then that's it, work stopped, and hunting for game began. All flying pigeons fell into the soup, they were knocked down with slingshots. It was scraping in my soul, because when we dive, the car already rings. Who was trusted for life? To the boys."

On the "best fighter of the Second World War", the Yak-3 of the 1943 model, the upper wing skin lagged behind on the fly, "which led to the skin being torn off in the air and inevitable disaster. According to the testimony of witnesses Colonel Engineer ZHUKOV and Major Engineer SALNIKOV, the percentage of aircraft with such defects was large and reached 40% of those received by the unit. As a result, flights on these aircraft were banned in 1945. On December 24, 1941, after testing the captured Friedrich, the head of the Air Force Research Institute Fedorov wrote to the Deputy People's Commissar for the Aviation Industry AC Yakovlev: "Today we do not have a fighter equal to the Me-109F." To be honest, we didn't even have "tomorrow".

But as the clever Tupolev used to say: "To hell with him, let's take it in quantity!" They took it in quantity, it only took four years and the help of the allies for this (in 1942, Soviet pilots reported that in order to bring down one "Messer", at least two "yaks" were required. In fact, it took six of them, in any case, it was this was the ratio of combat losses of German and Soviet fighter aircraft).

Therefore, the main burden of repelling the German air attack fell on I-16 and I-153 vehicles, produced in 1938–1941 and remaining the main fighters of the Red Army Air Force. There were 3804 units of those in the Western theater of operations, plus

542 in the inner districts of the European part of the USSR. They were noticeably - more than 100 km / h - inferior to enemy fighters in speed, but they were numerous and well mastered in military units both in terms of piloting and maintenance. In addition, victory in battle is achieved not only and not so much

by the quality of equipment, but to a greater extent by the quality of flight personnel capable of developing and implementing the most effective tactics of action in the fight against the enemy, the intelligence of the fighter, his desire to fight. With this approach, the U-2 turns into a "legendary" night bomber. The Germans did not consider the I-16 easy prey: "The characteristics of the I-16 were quite good. While not as

fast as the German planes, it was more manoeuvrable. I-16s could successfully operate against German bombers. The combat losses of the pilots who fought on the I-153 in the first two months of the war were lower than on the new Yak-1, Mig-3, LaGG-3 fighters. It got to the point that until the autumn of 1942, the Kremlin repeatedly raised the issue of resuming the production of Polikarpov

machines.

The authors of the Soviet manual "Fighter Aviation Tactics", published in 1943, did not complain about "outdated equipment", taught how to use it correctly, recommended taking into account their advantages and knowing the enemy's vulnerabilities, using the surprise factor and using cunning: "Overview is the weak point of a fighter Me-109. Not without

reason, this aircraft is considered the most "blind" of all types of fighters. The pilot of the Me-109 cannot see the enemy that has come in the tail ... The I-16 aircraft, of course, is inferior to the Me-109 in speed, but in terms of maneuver it

is better than the Me-109. The I-16 cannot impose a fight on a "Messer" who does not want to fight, but the I-16 is able to deal perfectly with an enemy going to battle. The I-16 can always dodge the Me-109 attack, if only the I-16 pilot spotted the enemy in time. Usually, the battle on the I-16 is fought last in frontal attacks. For the I-16, as well as for all types of fighters, the advantage in height is of great importance. When attacking Me-109 from the front hemisphere from above, the pilot of the latter is not protected by anything. The I-16, which is on top, can attack the Me-109 from behind by descending, so it is absolutely necessary for the I-16 group to have an excess and separation in height so that at least one pair is on top.

The I-153 aircraft should fight in the same way as the I-16 aircraft, the excellent maneuverability of the Chaika makes it invulnerable to the clumsy Me-109, if only the Chaika pilot has a good look around. The I-153 can always wriggle out of attack and meet the enemy with head-on fire. At the same time, it often turns out that the I-153 can fire at the Me-109, but it does not have time to turn on the Chaika. In the end, "correct tactics minimize the

shortcomings of technology and expose its advantages," and "the actions of a pilot in air combat are based on his quick wits." Well, among other things, we had "the most advanced in the world", verified by the

unmistakable Marxist method, military theory, which, in the person of "one of the founders of the Soviet operational art of the Air Force" A.N. Lapchinsky argued: "In addition to the main data favorable for us in the balance of forces, it is also necessary to add the qualitative class homogeneity of the personnel of the Red Air Force. Aviation, as the highest manifestation of technology, is fascized at its top in all capitalist countries. The air force, more than all other technical troops, relies on "craftsmanship." The main contradiction between the working base and the fascist elite is especially clearly manifested precisely in aviation. At the present moment of exacerbation of class contradictions throughout the world, the fate of fascist pilots flying in machines, preparing for flight with that technical base in which the fascist cannot have confidence, is especially unenviable. The war cannot fail to reveal in its entirety

this contradiction in the very essence of the air weapons of the bourgeois countries.

That is, the "fascist" flies and is tormented by black thoughts, didn't the technicians plant a wrench in the engine, didn't they pour sugar into the gas

tank? While: "The air fighter of the Red Army, due to the class solidarity of our Red Army, does not conflict with its earthly base and does not experience the fears that are characteristic of our class enemy. But the calmness communicated to the air fighter by confidence in his moral and material base is a factor of paramount importance.

Chapter 2



Discussing aspects of the theory of air warfare, of course, one cannot ignore the colorful figure of Giulio Douai, who was the first in the world to properly appreciate the enormous capabilities of combat aviation. In the 1920s, this Italian general expressed his revolutionary views in numerous publications, arguing that only gaining air supremacy could ensure victory in the coming

military clashes.

To have air supremacy, - Douai formulated, - "means to be able to take offensive actions against the enemy of just such a scale, surpassing all others that the human mind can imagine; it means being able to cut off the enemy land army and navy from their bases, depriving them of the opportunity not only to fight, but also to live; it means to defend in a certain and unconditional way their territory and their seas from such attacks; to keep its army and navy in combat-ready condition; to allow one's country to live and work in complete peace, that means to win." The fate of the one who cannot secure air supremacy is unenviable - "to remain completely dependent on the will of the enemy, without any air protection, to be subject to the most powerful

attacks that the enemy can make everywhere with the greatest ease and minimal risk; in short, **it means to be defeated and forced to accept the conditions that the enemy will like to put.** It followed from this that the former traditional means of armed struggle would no longer be able to play the main role and would be supplanted by the air fleet as the decisive weapon of war. Since, firstly, aviation is an exclusively offensive weapon; secondly, ground forces and the navy can only inflict indirect damage on the

enemy, the main blow is delivered by aviation, destroying industry and manpower; thirdly, in order to achieve success, there is no need to capture the territory and objects of the enemy, the main thing is to break his will at the front and in the rear:

"What could a land army do if its lines of communication were interrupted, its depots burned, and its industrial and supply centers destroyed? What could the navy do if it were no longer safe in its ports, if its bases were burned and its arsenals and transport ships were destroyed? How could a country work and live under an eternal storm, overwhelmed by terrible nightmares of inevitable and universal destruction? For it must be borne in mind that an air attack is directed against targets not only with the least material

resistance, but also with the least moral resistance. If the regiment is still able to resist in the destroyed trench, having lost two-thirds of its composition, then the whole workshop sees its work interrupted

due to the destruction of one group of machine tools and scatters at the slightest loss.

It is clear that the basis of the air army of the future should be bomber units, which "should have maximum power corresponding to the volume of the tasks ahead and providing results of the proper value." In addition to bomb carriers, it was envisaged that there should be a minimum of "air combat units" that would counter enemy air forces. At the same time, air combat aircraft were to be not light single-engine fighters, but multi-seat and well-armed "air cruisers" capable of providing reliable cover for bomber formations throughout their entire range. Ideally, you should create a universal fighter-bomber that performs the function of a "single aircraft".

On the basis of these arguments, the general proposed creating an air force only for offensive operations, refusing to develop not only auxiliary aviation and air defense, but also the ground forces and navy.

Douai thus radically proposed moving the attack to the air. Douai saw the main task of the coming revolution in military affairs as replacing the usual occupation of the enemy's strategically important areas with the total destruction of those industries that support the actions of his armed forces, thereby forcing the enemy to capitulate, without using either the army or the navy. Actually, the ground forces are needed only to accept the surrender of an already defeated and demoralized enemy. Shortly before his death, the guru of total air warfare presciently

warned:

"Victory smiles on those who anticipate changes in the forms of war, and not on those who adapt to changes. In the present period of abrupt transition from one form to another completely different from it, he who first boldly and decisively rushes along the new path will have an invaluable advantage, since he will take advantage of all the benefits that the new form gives compared to the old ...

Anyone who is not prepared for a new way of warfare will not have time not only to prepare, but also to get used to the new environment.

Whoever is the first to be ready for a new war will be able to win in a short term, but also with minimal means and minimal sacrifices.

The "extremist" theory of the Italian general caused a heated discussion in military circles, giving rise to both ardent adherents and implacable opponents. His theory was not adopted in any of the countries, but in general it contributed to the growth of interest in bomber aircraft and the belief in the possibility of its more effective application. The ideas of the general were most popular in Great Britain and the USA (but only the Americans managed to bring it to life).

While the winners of the First World War were resting on their laurels, the generals of "humiliated" and disarmed Germany did not leave the thought of revenge for a minute. They secretly and fruitfully experimented with the latest types of weapons (in which the Soviet Union provided invaluable assistance), picking up the keys to a future victory. Among them were fans of Douai's theory, for example, the future Chief of Staff of the Air Force, General Walter Wefer, or the commander of the "Training Squadron" Robert Knaus. For the small but highly professional Reichswehr, the theory of mobile strategy was developed. General Seeckt, the chief of the land forces, wrote in 1921: "All future methods of war seem to be connected with the use of mobile armies, relatively small, but of high quality and operating effectively with air support." In order not to waste the talent of German engineers, a significant part of the firms moved their activities abroad: to Switzerland, Denmark, Sweden, the USSR, Holland. There it was possible to safely design aircraft, guns, submarines, invent military

toxic substances. The

ideas of the Führer of the National Socialist Party, who was striving for power - about the revenge of France, about the living space, about the great Reich - were met with understanding in the soul of the German people. Despite the fact that Hitler did not hide his aggressiveness, stating more than once that all his actions are dictated by hatred, and there is no other way to resolve the German question than war: "There is only the path of violence, which has never been without risk." When the Nazis came to power in

early 1933, 3,200 people were employed in the aviation industry, exactly a year later - 16,000 at seven aircraft and four engine-building plants. Monthly output has doubled and reached 72 machines. Another two million workers worked to expand the network of airfields, control towers, warehouses and hangars.

In August 1934, the Führer of the Party became the Führer of the German Nation and moved from words to deeds. Article after article, Germany abandoned the restrictions of the Treaty of Versailles, and on March 16, 1935, Hitler announced the introduction of universal military service. A week earlier, the existence of the Luftwaffe had been officially recognized. Under the slogan "Our cause is just!" The Germans began preparing for war.

"War serves the cause of the preservation of the nation and state or ensures their historical future," the OKW memorandum said. This lofty moral goal gives the war its total character and serves as its moral justification. It puts war above a purely political act and above a military duel because of economic benefits."

Hitler and his commanders understood the futility of confrontation on two fronts. This means that the opponents had to be defeated one by one, in the shortest possible time with minimal material damage, in order to break their will to resist with sudden powerful blows. Germany's economic possibilities simply would not have allowed her a prolonged war with the great powers.

The way out of this situation could be the strategy of "quick war" or "war of destruction", which should ensure the defeat of any enemy even before he is able to fully develop his military and economic potential. Thus, in Berlin, they staked on the most efficient use of available economic opportunities to prepare the armed forces for individual lightning campaigns, the pauses between which made it possible to accumulate new reserves for the next strike. The main tools of the "blitzkrieg" were the armored forces and the air force. Tank wedges and pincers were supposed to dismember and surround enemy formations, aviation - from the first days to gain air supremacy, destroy railway junctions, completely isolate the area of decisive hostilities from the rear of the enemy, and provide direct support to their troops on the battlefield.

The Führer rejected Douai's ideas. First, in order to conquer "living space" he needed a massive invading army, supported by a powerful air fleet; secondly, there were not enough material resources and time to create strategic aviation. Therefore, strategic bombardment of enemy territory was not envisaged by the "scenario". Aviation was supposed to interact on the battlefield with tank units, crushing enemy troops, and its industrial centers were to be captured, not destroyed. The British military theorist J. Fuller noted: "Hitler's goal was to break the enemy's will to fight in the shortest possible time with minimal damage to material values. His tactics relied

on the use of a propaganda offensive followed by a lightning strike. Hitler revised Douai's theory from the point of view of the sequence of actions: it is necessary to undermine the morale of the civilian population of the enemy before, and not after the outbreak of hostilities, not physically, but intellectually. Hitler said: "What is war but the use of cunning, deceit, delusions, blows and surprises? There is a deeper strategy -

war with intellectual weapons, and why should I demoralize the enemy by military means, if I can achieve the same better and cheaper in other ways.

The main document that outlined the views on the role, tasks and methods of using aviation was the "Guide to the conduct of an air war", compiled by the Air Force headquarters in 1936. In this document, the air force was considered as a branch of the armed forces capable of independently solving operational and strategic tasks and providing direct support to the ground army and navy. The main attention was paid to the issues of independent actions of aviation, but at the same time it was noted that the most important for her

goals and objectives "should be established on the basis of careful consideration of all military, political and economic factors."

The Luftwaffe, the manual said, is the most mobile and fastest instrument of war, capable of decisively contributing to the implementation of plans for crushing operations and campaigns. Their sudden use at the very beginning of a war can have a decisive influence on its outcome. The Air Force gives the command the opportunity to create a strike group at lightning speed and unexpectedly for the enemy, as well as to shift the direction of the main attack.

The most important prerequisite for solving all the tasks facing the air force was considered to be the destruction or suppression of enemy aircraft, the conquest of air supremacy. The fight against enemy aircraft was supposed to be carried out, first of all, by delivering surprise attacks on airfields. The use of fighters for air combat was recognized as a less effective way to fight for air supremacy. The views of the land command on the role of aviation were set out in the field manual. In it, the air

force was seen as a means of gaining air supremacy in decisive directions in order to create the necessary conditions to support the rapid advance of the field armies. In accordance with the adopted doctrine, during the construction of the German Air Force, priority was given to medium-range front-line

bombers capable of closely interacting with ground forces. Fighters were also widely used to support ground units. And almost a quarter of the combat vehicles were reconnaissance aircraft and fire spotters. Bolshevism has been aggressive since its birth. Back in 1916, V.I. Lenin, having substantiated the possibility of the victory of the revolution in a single country, at the same time concluded that the proletariat of this

country would have to fight the whole world of "unbridled imperialism", for "the free unification of nations in socialism is impossible without the stubborn struggle of the socialist republics against the backward states." That is why "Soviet military thought unanimously rejected Douhet's anti-scientific and adventuristic aviation theory": in the eyes of Soviet "military thinkers", the heresy of the Italian was not an excessive enthusiasm for the

idea of a total air war, but a denial of the need to occupy a defeated enemy, and hence the need for a mass army in favor of compact, mobile, professional armed forces. The Red colonialists, who were preparing to wage a "class war with broad maneuverability of actions" against the capitalist encirclement, were not interested in such a victory. Their goal was not to achieve any political, economic or territorial concessions from unfriendly neighbors, but to occupy and completely sovietize the occupied areas, join them "to the socialist coalition", and ultimately - the worldwide victory of "labor over capital". Moreover, in accordance with communist morality, any war that the Bolsheviks get involved in, even with the Zulus, will be sacred and just. People's Commissar for Military and Naval Affairs of the USSR M.V. Frunze, who dreamed of creating a comprehensive theory of proletarian military art, in the midst of devastation and famine

prophesied: "We will have such an army that the world will gasp!" To create such an army, unconditional militarization of the entire life of the state is necessary; "the energy and will of the country should be directed to the creation and strengthening of our military power"; the consciousness of every inhabitant "should be imbued with the idea that our country is still in the position of a besieged fortress and will be in it as long as

capital".

In 1926, the Chief of Staff of the Red Army M.N. Tukhachevsky, speaking at the At the First All-Union Congress of the Military Scientific Society, he brought to the attention of the audience:

"Our Soviet Union is not a vague coalition of capitalist states, but we, too, will expand into a socialist coalition when new socialist revolutions break out or when we have to occupy this or that area under the dominion of capital ...

After all, each territory occupied by us is, after occupation, already Soviet territory, where the power of the workers and peasants will be exercised. In this way we expand our territory and at the same time expand not only our basis for war, but also the socialist basis in general.

Head of the Aviation Department of the Frunze Military Academy Brigade Commander A.N. Lapchinsky in "fundamental work" with the characteristic title "Air Army"

wrote:

"It is impossible to imagine a future big war in such a way that an air army of the Douai type will wage an air war, and the ground forces will wait for the moment when victory in this air war is achieved and when the participation of the ground forces becomes redundant, and they can calmly disperse home.

No matter how actively aviation operates in the enemy's disposition, it cannot occupy a single inch of enemy territory, it cannot capture a single prisoner, not a single rifle or cannon. It is clear, of course, that it is in no way capable of an offensive in the sense in which we understand an infantry offensive. In order for the damage inflicted on the enemy by aircraft to acquire offensive or defensive significance, offensive and defensive actions on the ground are necessary ...

Modern armies of millions, equipped with powerful equipment, are not created in order to indulge in contemplation in the trenches and then be demobilized. It cannot be, and it never will be. The decision in the war will be reached in a series of grandiose air-land battles, and the threat to the given political existence of the enemy will not be the air fleet, which has won absolute air supremacy, but the land army, air force and navy. Such a concept is somewhat more interesting than the fables of the Italian general and his adherents ... **Since there is a massive offensive army, the main task of the air army is to help move this army forward,**

for which all forces must be concentrated. But on the other hand, noted another Soviet theorist and an ardent supporter of the creation of strategic bomber aviation in the Soviet Union - Deputy Chief of the Red

Army Air Force V.V. Khripin: "Acute disputes, the most contradictory assessments of Douai's theory testify, first of all, to the fact that this theory is really an outstanding and significant phenomenon in the field of military

thought. A number of individual propositions in his generally untenable conception are also of the greatest practical interest for us. It would be wrong to discard a number of Douai's valuable thoughts just because the fundamental basis of his entire concept is incorrect and unacceptable. That is, something from the deceased could still be borrowed and adopted, for example, the idea of creating powerful air armies, conducting independent strategic operations and gaining air supremacy. Komkor V.V. Khripin and brigade

commander E.I. Tatarchenko in his work "Air War" divided the Air Force into three

main groups: air armies, or "independent air forces", army aviation, naval aviation:

"The independent air force is the main part of the air force, consisting of the most powerful formations of aircraft (mainly bombers) and of formations and institutions that ensure the combat activity of the core of combat forces (units and formations of other purposes: air combat, attack aircraft, reconnaissance, transport and landing aircraft, communications aircraft, etc.). The independent air force constitutes the main strike force of the air fleet and forms the main maneuver grouping, which performs the main tasks in an air war and, if necessary, can provide support to auxiliary forces performing private tasks. The main purpose of independent air forces is the destruction of enemy air forces, operations against the rear of the enemy, airborne assaults, and support for land and sea operations. They can participate in operations of all kinds, performing the main task or ensuring its implementation. They are usually assigned only to operations of particular importance in air, sea and land warfare.

Both categories of service air forces are allocated in the minimum, strictly necessary number to perform the tasks of servicing the land and sea armed forces ... Among the main objects of air

destruction by large masses of long-range aviation, aviation, chemical and artillery plants, bases and warehouses, military ports, energy centers, the most important areas of the extractive industry and, finally, large cities ...

Air superiority (superiority) achieved is the best air support for operations. The matter was not limited to simple

theorizing: the quantitative and qualitative growth of the USSR Air Force in the 1930s proceeded while maintaining the dominant role of bomber aviation, especially the heavy one, which was tasked with conducting large-scale air operations in the initial period of the war. In the summer of 1932, the Chief of Staff of the Red

Army A.I. Yegorov presented to the Revolutionary Military Council theses on the new operational and tactical possibilities that appeared in connection with the technical reconstruction of the Red Army. From the "Air Fleet" section: "1. Our air fleet has

come close to a new stage in its development, which, on the basis of its increasing combat significance, requires new starting points in the use of both individual types of aviation and the Air Force as a whole. 2. In the first period of the war, all available

combat aviation (including naval and military aviation) **is massed for independent actions to exercise air supremacy**, disorganize the rear, disrupt mobilization, concentrate the army and destroy enemy naval forces. The basic principles of the combat use of massive aviation should

to pursue the solution by the air forces of the Red Army of the following tasks:

a) have air supremacy both for attack and for the direct defense of the territory of the Union, and especially the economically, politically and militarily important regions, regions and centers.

b) In the event of an attack on the USSR by any of the capitalist powers or a bloc of such states, to radically disrupt the mobilization and concentration of their army and disrupt the economic life of entire regions, and primarily in relation to military production.

c) Destroy and destroy, in cooperation with the naval forces, any enemy fleet that will operate in the water basins of the seas adjacent to the Soviet Union. d) Drop airborne troops in the most

revolutionary areas to organize and develop armed struggle behind enemy lines and in operationally advantageous areas

areas of enemy territory.

3. In the course of a war, all combat light aviation comes under the control of the field command of the armies and fronts and interacts with the field troops. Combat heavy aviation, as a rule, remains in the hands of the High Command to solve independent tasks, like a long-range air fleet, to work against the political and economic bases of the enemy. Aviation should be used massively, unexpectedly for the enemy, resolutely,

in close cooperation of all branches with each other. These provisions were reflected in the instructions "Temporary instructions for conducting

deep combat" developed by the Headquarters of the Red Army. At the same time, optimal scenarios for entering the war were being worked

out. In October 1933, the teacher of the Military Academy of the General Staff E.A. Shilovsky in the article "The Initial Period of the War" wrote: "The strategic and operational doctrines of our potential adversaries assign a large

place to the **independent actions of the air forces from the very first moments of the outbreak of hostilities**. The purpose of these actions is to disrupt the mobilization and concentration of the enemy, the suppression

of his air forces, actions against industrial centers, large track junctions, power plants, political centers, etc. Until the ground armies are deployed, the bulk of aviation, according to the views of most foreign authors, unites in the hands of the main and front command and delivers powerful concentrated strikes to great depths. Broad air war becomes the order of the day. From the first moments of the outbreak of war, the imperialists strive to carry out air incursions at large radii (500 km or more,

depending on the location of the objects for action) ...

New types of troops and new technical means (aviation, motorized mechanized units, mechanized cavalry and other means of destruction), which can be put into action from the first moments of the war, are such powerful weapons and can shake the enemy so strongly that the result of their actions will have a decisive impact on during subsequent operations and, perhaps, even at the end of the war. Therefore, the operations of the initial period are not of secondary importance, but of very important and responsible importance. Therefore, it is possible and must boldly use the new types of troops in full from the very beginning of the war for a swift offensive and strike, while the enemy troops have not yet assembled.

According to this scheme, the bulk of aviation, united in the hands of the main and front command, inflicts deep and powerful blows, lands airborne assault forces, disrupts mobilization and concentration, and shakes the rear of the country. The

cavalry and motorized mechanized formations invade to the utmost depth, disorganize the deployment of the army, force it to be carried to the rear of the country, producing it under adverse conditions, capture important lines and areas, smash warehouses and command centers, together with the landing troops create an extremely tense situation behind enemy lines. Behind this first echelon, which

invades the territory of the enemy, the land army is deployed, but not along the state border, but on the captured lines, and since the enemy's army and country are already demoralized, it completes its defeat with its rapid offensive.

Let us not exaggerate the power of Soviet theoretical thought. The author took all these "schemes of tomorrow" from a review of foreign literature, but they fell on fertile ground and formed the basis of the theory of the "red blitzkrieg": "According to the views of

some French authors, the following possible scheme of operations of the initial period in the Franco-German theater emerges: a) The rapid invasion of the territory of the enemy by the covering army, preceded and

supported by air divisions. The use of aviation is conceived not only for bombing operations, but also for "jumping over the front" through the production of tactical and operational landings.

b) This invasion has the task of

preventing mobilization in the border zone, hindering the mobilization of the enemy throughout the country and preventing the concentration of his army. Further, to occupy a line convenient both for

developing a subsequent offensive deep into the enemy country and for securing one's own territory, and to hold this line until the main forces of the mobilized mass army are concentrated.

c) Mobilization and concentration of the covering army on the border is carried out a few days before the start of hostilities. With the outbreak of hostilities, 2-3 cavalry corps with motorized mechanized units invade enemy territory, supported by air divisions. Shooting down the covering troops, the invading units advance by the end of the first day to a distance of up to 100 km from the state border. d) Other air divisions

bombard communications centers and important centers in the enemy rear (300-500 km) ...

g) In the future, battles are fought for gaining time until the main forces of the mobilized army...".

"The views of some French authors" - covering armies, ensuring the mobilization and deployment of their forces by invading adjacent territory, mechanized and cavalry corps concentrated at the very borders in readiness to capture "important lines", air divisions aimed "from the very first days of the war to gain dominance in the air," almost everything was reflected in the plans for the strategic deployment of the Armed Forces of the USSR. From here there was only one step left to the conclusion that the war should be started not with a formal declaration, but with a sudden and crushing air strike. The head of the Soviet Air Force, Yakov Alksnis, directly pointed out: "It seems very advantageous to take the initiative and be the first to attack the enemy. The one who showed the initiative by attacking the airfields and hangars of his enemy can then count on air supremacy. (The military-political leadership of France ignored the "views of some authors" and preferred to swell

three billion francs into the impregnable fortifications of the "Maginot Line". In early 1939, General Chauvino's book was published with the characteristic title "Is an invasion still possible?"; ", the aged Marshal A. Pétain expressed the conviction that tanks and aircraft do not change the nature of the war and that the main condition for the security of France is a solid front, reinforced by fortifications. No wonder Charles de Gaulle called the chapter of his memoirs of the pre-war period "On an inclined plane".)

There were also some disagreements in the ranks of Soviet military theorists, which was allowed until the Kremlin formed its own opinion about the goals and plans for a future war.

For example, Lapchinsky recommended that the Air Force not get carried away with independent operations, but focus, first of all, on ensuring a successful offensive by ground troops:

"Attempts to consider the air force as an independent element of the armed forces of the country are usually associated with the initial period of the war. During this period, they expect to wage an independent air war, with the goal of destroying political and industrial centers, by disrupting mobilization, by sinking the navy in its bases, by destroying ports and shipyards, by blowing up firearms depots, destroying arsenals, various factories, etc. e. to prevent the enemy from even starting military operations on land and at sea, and thus bring him to his knees. The only question is whether the necessary means are currently available for independent aviation operations ...

If there are enough forces to provide, first of all, assistance in moving the earth front forward, and there is still a surplus of forces, then it will be very advisable to bombard enemy air rear facilities. If, however, there are not enough forces to solve these two tasks, the most important task will be combat work in operational-tactical connection with the actions of the troops, and not the defeat of the deep air rear, i.e., the most important task will be air battles and the defeat of enemy airfields, i.e. gaining temporary and local air superiority, achieved through the massive use of large aviation forces in the direction of the main attack of the ground forces ... Since a maneuver war is being waged, it is necessary to win air-ground battles that start in the air and end on the ground, which

requires the concentration of all air forces in this time on this front...

The farther aviation breaks away from its troops, the more objects that are important for countering ground forces will be unaffected. But in this space, over which aviation flies, everything that an earthly enemy needs to win can be concentrated, and there may be cases when it is necessary to compare at the same time the cost of destruction caused to the enemy by aviation in his deep rear with the price of victory reached by the enemy on the ground ...

Operational communication with the actions of the earth troops does not provide for bombardment in general, but for the bombardment of objects chosen

expediently. And defeats at the front - where without Marxism - will lead to the decomposition of "class heterogeneous bourgeois army", demoralize and revolutionize its rear.

With such a formulation of the question, the main objects of attacks for aviation are no longer cities and factories, but enemy troops - tanks, artillery pieces, vehicles, infantry concentrations, and the main striking force is not strategic, but front-line bombers and attack aircraft capable of effectively operating on the battlefield. The bombing of cities is generally inexpedient from a military point of view and unacceptable politically, since the foreign proletariat "will not understand us" and will not support us: "Objects of military importance in a city located deep behind enemy lines cannot be reached with bombs; cities must be bombed as cities, if there are sufficient funds for this. If, however, there are no sufficient means for waging a merciless air war, there must be sufficient grounds for bombarding a city. The basis for this can be found in the actions of the enemy. If the enemy exerts moral influence on the population by bombarding our cities, the answer may be to punitively bombard his cities. By all possible means (radio, leaflets, pennants) the reason for such punitive bombardment must be explained to the general public in order to create an appropriate public opinion. It is clear that with such bombardment the goal is not of a material, but of a moral order. Therefore, aviation units and formations must be subordinate to the land

command and act in its interests:

"The command must be united. Air divisions, corps and armies must be subordinated respectively to the commanders of corps, armies and fronts as integral parts of the whole. No division of command in war has ever been useful. And since the air forces are called upon to play an extremely significant role in operations, it is necessary that the command be prepared for a unified air-ground leadership of unified air-ground operations, which cannot but affect the organization of a unified higher military education. Military targets, as we have seen, are relatively small and widely scattered. These goals do not require

the use of large battle formations. The ground command is interested in defeating these targets, and the distribution of aviation among the levels of the ground command does not at all mean a dispersion of air forces.

Air armies (large formations) should be at the disposal of the high command, which distributes them along the fronts, depending on where it seeks solutions.

The air divisions should be a regular part of every rifle corps, every cavalry corps and every large mechanized unit, because, wherever these corps and units work, they always need the direct assistance of their subordinate aviation. In any case, the main combat vehicle of the aviation troops is a bomber,

"carrying dynamite to the ground", preventing "movement, supply and control of the enemy", hitting enemy columns in tactical and operational depth, destroying headquarters, warehouses, aircraft at enemy airfields, destroying railway stations, preventing any maneuver. Attack aircraft, by systematic raids at low altitudes, suppress troops and technical equipment "located openly and massively" on the battlefield and on

the approaches to it, block the enemy air force at airfields, destroy suitable reserves, disrupt the supply of ammunition, etc. Fighters must conduct air fight, ensuring the work of their bombers and hindering the actions of enemy bombers, to fight enemy fighter and reconnaissance aircraft: "The meaning of fighter

support comes down to the timely readiness of our fighters to repel an enemy air attack on our special aircraft and thereby guarantee the success of the air operation as a whole. Fighter support means, therefore, air combat.

Great importance was attached to aerial reconnaissance, which was tasked with: revealing the enemy's intentions by tracking the location and movement of his troops, observing the "organization of his terrain", providing accurate and operational information to his ground units and bomber aircraft (as well as monitoring their activities and effectiveness). On December 30, 1936, the People's

Commissar of Defense approved the Provisional Field Charter of the Red Army (PU-36). For the first time, it spoke about air formations operating, in addition to independent operations, also in close operational-tactical connection with combined arms formations. The charter considered the tasks of assault, fighter, light bomber and military aviation.

The issues of aviation management and the organization of its close interaction with other branches of the military were also not forgotten. For example, in the book of the senior teacher of the Military Academy P.P. Ionova wrote:

"When organizing the struggle for air supremacy over the battlefield, it is necessary to provide for the transfer of the command post of the commander of a fighter aviation formation to the command post of one of the corps commanders operating in the main direction. This is necessary so that the commander of a fighter formation can himself observe the air situation in the area of the battlefield and make a timely decision on the introduction of new fighter units into battle. In addition, for complete observation of the air situation, it is necessary to have special observers at the command posts of neighboring corps. The command post of the commander of a fighter

aviation formation must have radio communications both with fighter aviation airfields and with the command of aviation units in the air ...

Between fighters in the air over the battlefield, there must be radio communication with the main airfield of the unit or formation to which these fighters belong. They should periodically radio about the air situation at the front and, if necessary, radio about support. What can I say, the theory was advanced and, importantly,

supported by material capabilities. And on paper, everything came out smoothly. Not in vain tal'dychili

political instructors:

Do not disturb our peace - we will plant a knife.

Chapter 3



After the Civil War, the main tactical unit of Soviet aviation was the air squadron. According to the peacetime states introduced on September 12, 1922, the aviation detachment had 8 active and 2-4 spare aircraft. Three detachments were reduced to a squadron, which was a military unit, two squadrons - to a squadron. There were also separate detachments and squadrons. All air units on the territory of the military district were subordinate to the assistant district commander for aviation. There were also units of central subordination that performed special functions. All aviation was divided into army and corps. The first included fighter and assault

squadrons and detachments, the second - reconnaissance. Bomber aviation was separated into an independent branch of the air force in 1924, when a new reorganization provided for heavy bomber squadrons. According to the "schedule" of September 16, the primary unit of the Red Army Air Force was a flight of three aircraft. formation light bomber

The fighter aviation detachment consisted of three units, in reconnaissance and light bomber aviation - of two. There were three aircraft in the heavy bomber detachment. In May 1925, aviation detachments of 6, 8 and 12 vehicles were introduced into the staff of rifle corps and cavalry divisions, intended for close reconnaissance and maintenance of artillery. Detachments were united in squadrons. The fighter squadron consisted of three detachments of three links - 46 aircraft, of which 12 were spares. The light bomber and reconnaissance squadrons included

three squadrons each and consisted of 31 aircraft, including 12 spares. There were two squadrons in the heavy bomber squadron - a total of 6 aircraft; due to the lack of equipment, by the end of 1925, it was possible to organize one Heavy Squadron, which actually consisted of one detachment and a "training cell", equipped with various "imported" machines. Over 60% of the reconnaissance and bombing fleet at that time were De Havillands and their Soviet counterparts R-1 and R-2. About 200 airplanes served in the fighters, including 112 D.XI Fokkers and 17 I-2s. On September 15, 1926, by a decree of the Revolutionary Military Council, the RKKVF was renamed the Air Force of the Workers 'and Peasants' Red Army. Since 1927, the creation of air brigades began. Initially, these were territorial formations, to which all air units in a certain territory, plus training units, parks, workshops and

warehouses, were subordinate. The brigade could include two or three squadrons for various purposes and up to a dozen detachments. By this time, a fairly clear

structure of the Air Force had developed. The Air Force Directorate in Moscow was subordinate to the directorates in the districts. The Red Banner Caucasian Army, later reorganized into the North Caucasian and Transcaucasian military districts, and the special Far Eastern Army, created in 1928, had their own air forces as districts. Similarly, the Air

Force included the air forces of the seas, operationally subordinate to the command of the respective fleets. Brigades, separate squadrons and detachments were subordinate to the directorates of the Air Force of the districts and structural units equated to them.

With the establishment of mass production of heavy bombers, the USSR was the first in the world to start creating strategic aviation - in full accordance with the "reactionary" Douai doctrine. On January 1, 1930, the Red Army Air Force had 33 foreign-made heavy aircraft and only two TB-1s. Exactly one year later, there were already 155 domestic bomb carriers in service. The number of heavy aircraft in the squadron was first brought to eight, in 1932 to 12 aircraft. The quantitative and qualitative growth of the Soviet Air Force increasingly acquired a "bomber bias".

Gradually, Soviet factories increased the production of aircraft of various types, which made it possible both to form new aviation units and formations, and to replenish already available.

On March 23, 1932, a resolution of the Revolutionary Military Council of the USSR "On the Fundamentals of the Organization of the Red Army Air Forces" was issued, noting that since the recent changes in the Air Force "transfer them from auxiliary weapons, which they essentially occupied until now, to the role of an independent branches of the armed forces, it is required to divide the air forces in accordance with the strategic and operational-tactical designation into military, army and front-line aviation.

The military aviation consisted of separate squadrons, one for each rifle, mechanized and cavalry corps. The squadrons were armed with light aircraft for reconnaissance, communications and artillery fire adjustment. Army aviation consisted of separate mixed aviation formations that were part of the combined arms armies. Frontal aviation was subordinate to the command of the military districts. Heavy bomber aviation was considered as a means of the Main

command.

In accordance with the tasks, flight performance and weapons, military aviation was divided into fighter, bomber, assault and reconnaissance. Accordingly, aviation brigades gradually became specialized, equipped with homogeneous equipment. Mixed air brigades have also been preserved. The brigade consisted of two to five squadrons.

At the beginning of 1932, the formation of heavy bomber aviation brigades began. Such a brigade included four squadrons of TB-1s or TB-3s that replaced them (48 aircraft), a squadron of R-6 escort cruisers (12 aircraft) and a squadron of I-5 fighters (31 units) to cover the airfield and escort near the front line. In 1933, for ease of control and the possibility of massive use, these brigades "in pairs" began to be reduced to heavy bomber air corps, which then added one or two brigades of high-speed SB bombers. Within a short time, five corps were formed, designed to carry out independent strategic and major operational-tactical tasks.

The Luftwaffe did not yet exist in 1934. In France, only the four-engine Farman F.221 was tested, and in five years it will be propagated in about 70 copies. In England, the Hayworth twin-engine biplane with a metal frame and fabric covering was considered the main heavy bomber. In general, in the first half of the 1930s, the political and social life of the "decaying" West, which dreamed of forgetting the world massacre like a nightmare, was experiencing a severe economic upheaval, proceeded under the banner of general disarmament. Heavy bombers, along with chemical and bacteriological weapons, were supposed to be banned by some international convention, or transferred to the exclusive disposal of the League of Nations to punish possible aggressors.

And over Red Square twice a year, to the "exciting melody of the International," one and a half hundred bomb carriers sailed, which simply did not have a real enemy in the air. More than 320 TB-3s took part in the maneuvers of the Belarusian Military District. Deputy Commissar of Defense M.N. Tukhachevsky together with the commander of the BVO I.P. Uborevich in a letter addressed to K.E. Voroshilov was offered, taking into account the possibilities of the Soviet

aviation industry, to have in the Red Army by 1935 up to 15 thousand combat aircraft. From the order of the Revolutionary Military Council No.-0101 of December 1, 1933:

“For heavy aviation, the main task is to have training in performing independent air operations, for which to master the skills to perform long-range bomber flights by units and formations, day and night, in different meteorological conditions, both above ground and above water. Work out the tactics of self-defense against enemy air attack. Conduct training on interaction with cruisers and light bombers during these flights. Master cloud bombing by timing and at night. To master the interaction with the Navy in the fight
against the fleet and landing forces of the enemy, in battle near
their own base, on approaches to it on the high seas and at the enemy base.

Master the technique and tactics of conducting combat formations with air enemy on the way to the target and back.

When in the summer of 1934 three units of TB-3 made "friendly visits" to the capitals of European states, it made a strong impression. The world, one might say, gasped. One of the British reporters wrote: "While Europe is arguing about the value of Douai's theory, the Reds have already actually implemented it, demonstrating powerful four-engine bombers that are significantly superior to British machines of a similar purpose," and a French correspondent pleased readers with the statement that "five hundred Russian bombers can crush Europe like a rotten egg." In fact, the matter was limited to records and demonstrations: there were always big problems with the organization of real systematic combat training in the Red Army, which was part of the national economy. Therefore, in December, the people's commissar stated that the most important tasks set by him were "largely underfulfilled", and "independent actions of aviation formations were worked out mainly in the form of long-distance flights of heavy aviation."

December 28, 1935 K.E. Voroshilov again signed the annual order on the results of combat training, in which he again indicated that aviation "has not worked out independent actions of large formations", that further improvement of the combat training of the Air Force must be built on the basis of independent operations in conditions of interaction with other branches of the military. The Chief of the General Staff and the Chief of the Air Force of the Red Army were asked to develop a special instruction for conducting air operations. The formations of heavy bomber aviation were ordered to practice attacks on large industrial facilities and railway junctions deep behind enemy lines, conduct large airborne assaults, and interact with naval forces when attacking enemy ships at sea and in bases during exercises and maneuvers. By the spring of 1936, the General Staff developed detailed instructions for independent actions of the Red Army Air Force, and on April 12 it was put into effect.

At the same time, it was ordered to establish a special aviation regime over the entire territory of the USSR, "excluding, even in peacetime, the possibility of a sudden appearance of aircraft over any point of the USSR that has important military-political and economic significance, without prior notification of the relevant aviation commanders." On January 8, 1936, the Air Army of the Reserve of the High Command was

created by NKO order No. The structure of its administration included: the commander, the headquarters, the political department, the department of the commanding staff, the weapons inspection and the material and technical department. AON consisted of four heavy bomber, three high-speed bomber brigades, support units, in total - 876 aircraft. Subsequently, the brigades were combined into three corps, which were stationed in Monino, Kalinin,

Voronezh. The first "air commander" was the famous aviation theorist commander V.V. Khripin. A year later, Kliment

Efremovich suggested that the party leadership not stop there and form another army for action against Japan. **The management** agreed. By order of NPO No.-0010 dated February 22, 1937, to perform special tasks in the Far East, aviation formations and units of OK-DVA were combined into 2-10 aviation army (AON-2) with subordination to the command of OKDVA and deployment in Khabarovsk. Commander F.V. was appointed commander. Ingaunis. In April, a single state of the special forces armies was established from two heavy bomber air brigades, one high-speed bomber and one fighter brigade. In total, the army had 250-260 aircraft: 150-170 heavy, about 50 front-line bombers and up to 50 fighters. A little later, long-range bomber squadrons on DB-3 were included in the GA - 31 vehicles in the state. By that time, the romance of the revolution had completely withered away in the bureaucratic swamps, everything had become faceless secret and, if not "special", then

"special" - special departments and special equipment, special receivers and special distributors, special design bureaus and special armies. It would be impossible to come up with something for the fear of the enemies of Soviet power: the 1st Deadly Air Fleet or the 2nd Bastille Steel Winged Legion are, after all, the only strategic air formations in the world! It was they who were supposed to deliver crushing blows in the initial period of the war, destroy the administrative and industrial centers of the enemy, destroy his military and naval bases, land numerous airborne assault forces, disrupt mobilization and strategic deployment, demoralize the enemy army and awaken the revolutionary activity of the "oppressed masses". The temporary instruction to the air forces of the Red Army provided for, in case of war, the concentration of air formations, as a rule, in the hands of the front command and their use to support one army

or another. Such subordination made it possible, if necessary, to concentrate the efforts of front-line aviation on the main direction of troop operations. However, based on the experience of maneuvers, it was concluded that it was expedient to transfer part of the combat aviation to the direct subordination of the army command - in order to organize "proper interaction". The role of the front command in this case was reduced to coordinating the efforts of aviation "in the course of fulfilling the common task of fighting for air supremacy and facilitating the offensive operation."

At the end of 1937, the Soviet Air Force consisted of 77 air brigades - 49 bomber, 10 assault, 14 fighter and 4 reconnaissance. The proportion of bombers was almost 55% of the aircraft fleet.

By the way, about landings. The "Tukhachevsky school" naturally raved about them: "If ... a country prepares for the large-scale production of airborne assault forces capable of capturing and stopping the operation of the enemy's railways in decisive directions, paralyzing the deployment and mobilization of his troops, etc., then such a country will be able to reverse the previous methods of operational actions and give the outcome of the war a much more decisive character ... Capturing

and destroying railways and highways, it is easy, even with small forces, to create very deep barrier zones, to overcome and restore which the enemy will need a lot of time ...

If there are people in the landing area who are specifically hostile to the bourgeois state and are revolutionary-minded, the importance of airborne landings will grow into an even more significant and decisive operational factor. The first

experimental non-standard airborne landing (164 people) and parachute landing (46 people) detachments were created in the Leningrad Military District in the first half of 1931. The experience was considered successful. At the end of the year, the commander of the troops of the district P.P. Belov reported that the exercises carried out confirmed the ability of the landings

to disorganize the work of the army and corps rear, to delay operational transfers for a long time, to disrupt the work of headquarters for the management of the operation, to destroy rear airfields and naval bases. The report proposed to form an airborne division on the basis of existing detachments, consisting of a motorized landing and aviation brigades, a parachute detachment and the required number of special units.

The Decree of the Revolutionary Military Council of December 11, 1932 marked the beginning of the creation of mass airborne troops as part of the Air Force. In order to "resolutely develop" the airborne business, train the relevant personnel and units in the Leningrad Military District, the 3rd Special Purpose Airborne Brigade was deployed under the command of M.V. Boytsova. At the beginning of 1933, the 1st, 2nd, 3rd, and 4th special-purpose aviation battalions were formed in the Volga, Belorussian, Ukrainian, and Moscow military districts, respectively. A little later, with the personnel divisions of the Moscow Military District, North Caucasian Military District, SAVO and the Separate Red Banner Far Eastern Army, non-standard separate special-purpose rifle battalions arose. The Air Force was entrusted with ensuring their release behind enemy lines, supplies and communications during hostilities. By the end of the year, 29 such battalions were created with a total strength of up to 8,000 people. In 1936, on the basis of regular and non-

standard airborne units, two special-purpose aviation brigades were additionally created: the 13th in the Kiev and 47th in the Belorussian military districts. In the Far East, as part of the OKDVA -1,2, 5th airborne regiments. In addition, three non-standard parachute regiments of 1660 people each are being formed in the Moscow Military District.

In parallel with the increase in the number of "winged infantry", means were developed for the transfer of paratroopers, supplying them with all types of material support. Combat aircraft were equipped with external suspension, cabins and cradles for the delivery of people, equipment and cargo; landing gliders were built; all kinds of landing aids were tested and put into service - from the banal individual and cargo parachutes, the production of which was launched in 1931, to the so-called "airbuses", designed for parachuteless dropping from a strafing flight (Judging by the description, an airbus of the famous brand "G" was an absolutely brutal, I would say, purely proletarian design, incompatible with the usual human psyche. It was a kind of streamlined flat container "with good shock absorption", with front landing gear or skis, in the compartments of which, separated by partitions, a dozen paratroopers were lying down. in such a helpless position, suspended under the belly of the transporter, they were delivered to the drop point, and then the most interesting thing happened: , landed on the terrain (!) with a sliding landing. " After landing on the terrain, like devils out of a box, paratroopers were supposed to jump out and, having dumbfounded the enemy with surprise, capture, for example, an airfield. The device was recommended for mass production). The experimenters enthusiastically dropped from the air on the ground, on the snow and on the water, with and without parachutes, a variety of caps, platforms, tanks, cars, motorcycles, snowmobiles and motor boats. Worked out the possibility of picking up people and cargo

by plane from the ground.

In the instructions for operational-tactical training for 1933, the Revolutionary Military Council demanded from the military districts: "Widely expand the training of airborne assault forces. To expand the practice of interaction between formations and units of the ground forces with airborne assault forces. Provide at least one major exercise of combined arms formations with airborne assault forces per year in each military district. In the tasks for 1934: "The production of airborne assault forces should become the subject of constant exercises for all combat (military and army, light and heavy) and auxiliary aviation, especially command personnel and headquarters ..."

In 1934, 600 paratroopers took part in the maneuvers of the Red Army; in 1935 on

3,000 paratroopers were parachuted at Kyiv and in 1936, at even larger Belarusian maneuvers, 8,200 fighters with artillery, light tanks and other military equipment were landed by landing method. We can say that the world gasped again. Foreign military observers, with their mouths open, looked at the troops, "flying tanks" and "air carts" dashing landing in whole units. The fight was also in the air - the squadrons of "red" and "blue" attacked each other and stormed ground targets. 440 aircraft were involved in the Kiev maneuvers, including 242 R-5, 89 I-5, 60 TB-3, 22 R-6 and 27 U-2 liaison aircraft: in Belarus - 632. At the exercises of the Moscow Military District, in addition to the consolidated parachute regiment, the 84th rifle division was transferred to the rear of the mock enemy by planes. Where are the German and Japanese militarists, to the militarists of the "Reds",

building the eighth wonder of the world - the world's greatest army.

The tasks of the Airborne Forces were enshrined in PU-36: "The most important task of the parachute troops is to support the army in operations to encircle and destroy enemy forces. Airborne units are an effective means of disorganizing the control and operation of the enemy's rear. In cooperation with the troops advancing from the front, paratrooper units can have a decisive influence on the complete defeat of the enemy in this direction. People's Commissar Voroshilov announced with aplomb at the party congress: "Parachuting is an area

in which the Soviet Union is a monopolist. Not a single people on earth can even compare with the Soviet Union in this field, much less dream of covering the distance we have taken the lead. There can be no question of being overtaken by us." Indeed, no one overtook us, only in the German-Soviet war the Soviet landing troops did not have any "decisive influence" for a number of reasons, including, according

to the Germans, "due to poor technical ^!) And organizational support from the command" . Colossal funds were spent on military toys and war games, but they did not bother to create a normal transport aircraft for the paratroopers - just give us bombers. Meanwhile, the value of the TB-3 as a means of landing airborne assaults, even in 1936, inspired doubts. According to the results of the MVO exercise, brigade commander E.I. Tatarchenko noted in his report: "Such a machine can be sent deep behind enemy lines only if it has undeniable air superiority, at least for the duration of the operation. Otherwise, you can only fly at night. But on short summer nights, the low-speed TB-3 will not fly far to the rear." However, there is only one main reason: a month before the start of the grandiose "performances", all the moves of the opposing sides were signed by hours and kilometers and strictly observed under the supervision of intermediaries - any initiative was punishable (If, in terms of the exercises of the Leningrad District, held in September 1937, ,

it was planned to throw a thousand paratroopers at 14.00, then they were thrown out according to the schedule, despite the wind speed up to 12 m / s: "As a result of this drop, 59 fighters and paratrooper commanders were injured, including 4 killed, 8 people with broken hips , 3 of them with fragment fractures, 6 people with concussion, 5 cases of sprains, 5 dislocations, in the remaining 30 cases - slight bruises and sprains"); in a real situation, the enemy interfered with defeating himself.

Interwar theories were tested by practice on the Spanish "proving ground".

On July 17, 1936, the "reactionary forces" of Spain, who did not want to be dispossessed, nationalized and liquidated as a class, revolted. Needless to say, not the first. Rebellions against the Popular Front government broke out every year. So, in October 1934, an uprising of miners in Asturias and anarchists in Catalonia was brutally suppressed. This time, a conspiracy to overthrow the "red" radicals was made by generals and officers, who were supported by most of the army, the bourgeoisie, the peasantry, and the clergy (which the socialists exterminated with particular zeal). The Civil War began.

Experiencing a huge need for heavy weapons and military equipment, General Francisco Franco turned to Hitler and Mussolini for help. Both in Rome and in Berlin, they decided to provide all possible assistance to the rebels in the "fight against communism."

On August 7, 20 German Junkers-52 transport aircraft and six He-51 biplane fighters arrived in Cadiz. Their task, at first, was to ensure the transfer of parts of the "Foreign Legion" and Moroccan shooters from North Africa to the Iberian Peninsula. On August 13, 12 Italian CR-32 fighters were unloaded in the port of Melilla. In total, Italy handed over 759 aircraft to the Falangists, Germany - 650. The Republican government also acquired military equipment and equipment

wherever it could - in Mexico, France, Poland. But the main supplier of weapons was the Soviet Union, which sold, among other things, 110 thousand bombs and 806 aircraft - I-15, I-16 (type 5, 6, 10 - a total of 455 copies), SB, R-5, - of which 648 arrived at their destination. Another 214 "gulls" and 40 I-16s were built at republican factories. The first batch of Soviet fighters was delivered to Cartagena from Odessa at the end of October 1936. If Hitler supplied Franco for free, counting on future dividends, then

Stalin for his "international assistance" received the gold reserves of Spain.

Following the equipment, Italian, German and Soviet "volunteers" reached Spain, changing their military uniforms to civilian suits, and service certificates and party cards to purely civilian documents. So, the German pilot Kraft Eberhard left Germany as part of a tourist group, and fighter pilot Georgy Zakharov and his comrades left for the "Voroshilov mission" from Sevastopol with the "crusts" of a nautical school cadet.

At first, the "interested persons" tried not to advertise too much their participation in the escalating war, but very soon the Italian-German assistance to General Franco grew into a direct intervention, in which about 250 thousand Italian, 20 thousand Portuguese and 50 thousand German military personnel took part. The USSR sent about 3,000 people to Spain. Instructors and advisers almost immediately became direct participants in the hostilities, and a foreign country turned into a testing ground for testing new weapons and tactics. The main structures of the German

Condor Legion, formed in November 1936, were a group of bombers, which included four squadrons of 12 Ju-52 transports converted into bombers with a top speed of 280 km / h, and a group of fighters of four squadrons of 9 He-51 aircraft. Then a reconnaissance squadron of 12 aircraft, a squadron of naval reconnaissance aircraft of 14 vehicles, an anti-aircraft group of six batteries, and two squadrons of "experimental designs" were added to them. As soon as the prototypes of promising aircraft rolled off the assembly lines in the Reich, they were sent to Spain for military testing and replenishment. By the spring of 1937, the legion received Do-17E, He-111B, Ju-86D bombers, Hs-123 dive bombers, He-112B fighters and Bf-109B messers.

Air battles "in a cloudless sky" showed that the I-15 fighter was superior in all respects to the Non-51 (so much so that legionnaire Harro Gardner noted in his diary: "Given technical backwardness, any resistance is meaningless") and has an advantage in horizontal maneuverability and rate of climb over the most frequently encountered enemy - the Italian Fiat CR 32. And the I-16 monoplane beat everyone in speed and vertical maneuver. The Italians tried to compensate for their weaknesses with the advantage of more powerful weapons, which made it possible to fight from long distances, out of reach of ShKAS fire. The Germans gradually reoriented the Non-51 to support ground troops and did not fail. The Soviet "hawks" tried to implement the armchair tactics of the interaction of maneuverable biplanes and high-speed monoplanes, but due to the lack of experience and radio communications, it turned out badly. After

the first attack, the battle invariably turned into a

dump. "Usually, we ended every combat day with a debriefing on the ground," recalls General G.N. Zakharov. - Rychagov tried to recreate the general picture of the departure, and attacks often loomed when we, as a whole group, rushed at one bomber, finishing it, rushed at another, and the followers had to take care of the safety of their leader and, of course, of their own. But more often than not, after the very first attack that Rychagov started, the formation broke up and a merry-go-round typical of that time arose at different heights: both friends and foes mixed up and each fought at his own peril and risk, although if in the confusion he managed to notice that it was difficult for a comrade, hurried to the rescue. But this is if you had time to notice and was nearby.

Only later, having fought, having gained experience in battles, we naturally came to understand the tactics of modern, by those standards, air combat. And at first, the pilots did not even take into account such tactical basics as entering the attack from the side of the sun. Therefore, they often started the battle from a deliberately disadvantageous position. Our main trump cards in the first days of combat work were the exceptional maneuverability of the I-15 and the individual

skill of the pilots. Bombers attacked ports through which military aid was received by both opposing sides, railway junctions, cities and airfields. The fighters tried to prevent them from doing this, and also performed the tasks of supporting the ground forces. The theory seemed to be confirmed: high-speed SB, Non-111, SM-79, operating unaccompanied in the daytime, made their raids with almost impunity. However, this did not last long, with the advent of a new generation of monoplane fighters at the front, cover had to be provided for bomb carriers. In addition, they began to fly in large, bristling machine guns, in groups. Major General of Aviation E.E. Yerlykin recalls: "It's like a parade, a group of 4 aircraft - 32 Junkers and Caproni with a large brick. Rychagov led the group, and I followed

behind. We saw that such a large group was coming, we had never seen such a group, and no one began to attack it. They carefully turned around just above Madrid and left. The sight of such a large group was embarrassing. Everyone knew that they were well armed, they were accompanied, it affected everyone. Rychagov refused to attack, I refused, Kovalevsky refused.

In the changed conditions, shortcomings appeared in the design of the SB: weak defensive armament, lack of armor and protectors in the fuel tanks.

Combat collisions of the I-16 and the first modifications of the Bf-109, armed with two rifle-caliber machine guns, showed approximately equal capabilities of these machines. Neither in speed nor in armament did the adversary surpass the "donkey". Of course, it was clear that the new "German" was a serious opponent: "But it was quite possible to fight with the Messerschmitt, he was clearly rather weak on the verticals. On verticals with I-16 jokes are bad. As for our I-15s, their situation, of course, has become more complicated. However, the salvation of the I-15 was still its extraordinary maneuverability. In a battle on turns, the I-15 could go into the tail of any of the aircraft that existed at that time, and we counted on it.

In addition, the I-15, along with the R-5 and R-Z aircraft, were widely involved in ground attack operations. The most common tactic was sudden strikes from low altitudes with a quick withdrawal to their territory. The sad

story about how "in August 1938, fascist units armed with the Bf-109E fighter demonstrated overwhelming superiority over Soviet fighters, and air supremacy completely passed to German aircraft" was invented in hindsight. Firstly, such a fighter did not yet exist, not only in Spain, but also in nature. Secondly, it is not clear how three squadrons of Messerschmitts were able to gain air supremacy "completely", and why Soviet fighters were not able to win it a year earlier, fighting with Fiats and Heinkels. And finally

the appearance of an enemy aircraft flying 30 km / h faster is no reason to decry your own weapons. In September 1938,

the Republican government of Spain, at a meeting of the League of Nations, announced a decision to completely withdraw foreign volunteers from its territory. Soviet pilots, who managed to destroy 213 enemy aircraft, were recalled to their homeland. The Spanish Republic fell in the last days of March 1939, in May the last German "volunteers" returned to their homeland. Legion "Condor" chalked up 314 air victories (own losses amounted to 96 aircraft, and combat - less than half); 14 thousand pilots and technicians who passed through it formed the backbone of the Luftwaffe.

In the course of the war, rich experience in maneuvering troops was accumulated, the enormous importance of aviation and tanks, as well as anti-tank and anti-aircraft artillery was confirmed, and many tactical developments were confirmed or refuted.

Squadron commander Werner Molders, who scored 14 victories in Spain over Republican aircraft, upon his return to his homeland was recognized as the leading authority in the field of combat use of fighters. He persistently introduced the principles of combat in a vertical maneuver. According to Molders, the attack should have been carried out from behind from above, mainly at small angles, at increased speed, fire in long bursts from a short distance, after the attack is completed, due to the kinetic energy of acceleration, go up again, from there prepare a new attack. In the event of a miss, the pilot also sought to break away with a steep "slide". This style of warfare has become a standard in the German Air Force. The Germans tried to avoid a maneuvering battle, as they firmly understood that a fighter "becoming into a turn loses the initiative." The yellow-mouthed oberfanerjunks memorized a simple set of rules: to continuously conduct all-round observation, maintain an excess over the enemy, take into account the position of the sun and the ground situation, maintain continuous radio communication, attack unexpectedly, open fire from a "pistol" distance (Soviet armchair theorists believed this style - when the pilot "wants to shoot down the enemy unexpectedly, and not to fight with him" - melancholy and cowardly and recommended to beat the enemy from any position: "The fighter enters the battle not to "wash away" at the first failure, but in order to destroy the enemy").

If at first German fighters flew on missions in flights of three aircraft, now a pair has become the basic combat unit - a leader and a follower. Fighters kept from each other at a distance of about two hundred meters. Such a distance allowed the pilots to fully concentrate on finding the enemy, without thinking about the exact observance of the distance between their aircraft. The leader of the pair conducted a visual search for the enemy in the front hemisphere, while the follower covered him from behind. In the air, as a rule, a link of two interacting pairs "worked".

The fighting in Spain had a decisive influence on the further development of the Luftwaffe attack aircraft. The mediocre He-51 fighter turned out to be a good attack aircraft, especially if the pilot showed initiative and ingenuity. The squadron under the command of Lieutenant Adolf Galland, making several sorties a day, was the first to test the tactics of actions to support troops on the battlefield, applying various innovations along the way - the use of advanced field airfields, dense combat formation, approaching the target from the rear of the enemy, "carpet" bombing in the ranks of the front. One of the inventions of German mechanics was homemade incendiary bombs made from 100-liter external fuel tanks. Particular attention was paid to the coordination of air and ground strikes. Although at first the "Hitler vultures" considered such actions beneath their dignity: "The performance of these tasks makes us feel like poachers who use weapons not quite decently compared to how real

hunters."

In April 1937, supporters of the concept of a medium bomber and targeted bombing, which made it possible to influence the enemy with maximum efficiency with minimal ammunition consumption and clear the way for advancing troops, finally won in the German Air Force. The formation of attack aircraft began. At the same time, despite the fact that the four-engine Do-19 and Ju-89 were already ready for testing, the Reich Minister Hermann Goering officially closed the program for creating a long-range heavy Uralbomber. In January 1938, a flight of three Ju-87As appeared in the Spanish skies. Pretty

soon they earned a good reputation among the flight crew and the recognition of the ground forces, and most importantly, they dispelled all doubts of the Luftwaffe leadership. Galland, who, after returning from a business trip, was instructed to develop a methodology for training the newly formed attack air groups, recalled: "Only from my own experience of fighting in Spain, I realized that there is a big difference between the tactics of fighters and attack aircraft. We had the task of supporting the advance of the nationalist infantry. We attacked the positions of the republican artillery, suitable reserves, prevented the delivery of ammunition. German attack aircraft became a necessary prop for every operation of the nationalists. Then our enemy had nothing of equal value. In Berlin, they were finally convinced how important the actions of attack aircraft were for the success of ground operations. By September 1, 1939, the Luftwaffe had 9 dive bomber groups armed with 295 Ju-87s and one close support group with 40 Hs-123s.

The main tactical unit of the German Air Force was considered a squadron (12-16 aircraft), consisting of three units. Three squadrons were combined into an air group (30-40 aircraft), which, in turn, were reduced to squadrons by three or four. The groups and squadrons had separate headquarters units. The next steps in the structure of the Luftwaffe were the aviation division and the aviation corps, which did not have a permanent composition and were actually created on a territorial basis. They carried out operational management of aviation operations in the operational area, and squadron commanders retained complete tactical independence. Air divisions and air corps were subordinate to the so-called aviation commands, which were also created on a territorial basis, depending on specific tasks. The highest operational unit was the air fleet, operating in a specific theater of operations. By the beginning of World War II, there were four fleets. In addition, the Luftwaffe organizationally included airborne troops, air defense forces and its own communications service. By the autumn of 1939, 16 regiments and 59 communications battalions of the Luftwaffe had been created. All this splendor was commanded by the magnificent Goering, who did not allow

the patrimony of strangers: "Everything that flies belongs to me!"

Only about 15% of aviation forces during the course of hostilities were transferred to field armies, the rest were united into air fleets, reporting directly to the Air Force High Command and performing tasks in cooperation with formations of ground forces. This greatly facilitated the organization and execution of maneuver along the front line or between fronts, and the concentration of the main forces of the Luftwaffe at the right time and in the right place in the interests of the German ground forces. The Soviet "volunteers" who returned from a

business trip also wrote reports: "We had to do it in the most detailed way - each in his own way! - describe the cars (ours and others), battles, tactics and everything that made us think there, in Spain. The leaflets written by us were then carefully studied by specialists - in this way, the combat experience was summarized bit by bit. They wrote a lot and in different instances. They wrote to the Air Force Directorate, to the People's Commissariat of Internal Affairs, Comrade Voroshilov and Comrade Stalin. On the organization of fighter air combat: "The best tactic is climbing and surprise attack from behind the clouds (from behind) using the advantage in height and excess

speed." On the principles of using attack aircraft: "Suddenly and in the shortest possible time, give maximum fire." About ways to cover their bombers. About the shortcomings of our military equipment and methods of training pilots.

Here, for example, on April 5, 1937, a meeting took place between the "Spaniard" pilots and the leadership of the Red

Army: "KHOLZUNOV (in Spain - the commander of the bomber squadron): The use of the Security Council, I think, was wrong in most cases. They bombed along the front, but the tasks were often set very illiterately, many commanders did not feel any training, although most of them graduated from the Academy or studied at the Lipetsk school.

There were cases when the task was set in this way: to bomb a detached house northwest of Casa del Campo. Requires 3 SB aircraft. And that's all. And how many kilometers - at least they indicated ... No guidance from above

as to which systems or orders are best, with regard to ensuring that there are as few casualties as possible, we have not seen.

Our organization seemed to be large: the aviation headquarters is considered, then there are group headquarters, then squadron headquarters. The aviation headquarters does not make a decision like an aviation headquarters, but makes a decision that the detachment commander should have made: he indicates the route, how many planes and where how many bombs to drop ...

Control in the air is produced by the evolution of the aircraft. In order to fix communication, you need to put a person there who would be exclusively in communication ...

YERLYKIN (commander of a special group of I-15 fighters): At first, we could not come up with any tactics for ourselves. Airplanes came in and we pounced on them like dogs. The Germans see that things are bad, they immediately go into a steep dive and leave. Then we attacked another plane. In general, it was customary for us to pounce on one or two, knock them down to the ground and then climb up on the others. We always walked in a group, never scattered (*mainly because the Soviet fighters did not have radio stations.* - *Auth.*). Based on the experience of the first battles, we decided not to yield air under any circumstances, and in

subsequent battles we began to attack first and worked out our own tactics. We had 4 links - the leading four, the closing four, 2 triples on the right and left. One of the triplets was much higher, the patrol guard ... By the end of December, we worked very well with the I-16. Very rarely then began to lose

their people."

It is a pity that it turned out to be of no use to anyone. In 1936, a wave of everyday massacres of "kulaks", "saboteurs" and "residual classes" reached the very top and turned into the Great Massacre of the old Bolsheviks, comrades-in-arms of the "imperishable body", hung with orders and privileges of the "heroes of October", the Civil War and great social experiments. Everyone went under the knife.

"The USSR was in a capitalist environment," said L.M. Kaganovich, - the war was approaching with the imperialists and, apparently, with all at once. Therefore, it was necessary to strengthen the country, the rear and the future front in every possible way. Based on this, it was decided to uproot the "swamp", that is, to destroy all the unreliable and vacillating. The war in Spain, in which Germany and Italy were actively involved, was regarded by Stalin as a harbinger

of a new world war, on the eve of which it was necessary to "improve the strong body of the Soviet state" and, of course, "the body of the Red Army" in a short time. Clever commanders, according to Stalin's plan, were to be replaced by personally devoted, thinking commanders - loyal, from a new generation of nominees.

The total purge of the army began in the spring of 1937 with the destruction of the "gang of criminals and saboteurs", led by Marshal M.N. Tukhachevsky, who made up a "military-fascist conspiracy" with the aim of losing the war with Germany and restoring capitalism in the country. The program of action of the conspirators, drawn up in the offices of the Lubyanka, in

in general terms looked like this:

1) weakening the military power of the Red Army in order to achieve the defeat of Soviet power; 2) organization of sabotage and sabotage; 3) the implementation of terrorist acts against the leaders of the party and government; 4) spying for "foreign intelligence agencies". Aviation, as you know, the Leader was especially fond of. "You can say," writes Marshal G.K. Zhukov, that aviation was even to some extent a hobby of I.V. Stalin." Therefore, in three and a half years, four chiefs were replaced in the Air Force, and they left by no means not retired.

In May 1937, Deputy People's Commissar of Defense Commander-in-Chief of the 2nd Rank Ya.I. Alksnis represented the Air Force in the Special Judicial Presence, which unanimously sentenced Tukhachevsky's group to execution. They say that Yakov Ivanovich was very zealous at the trial and filled with indignation towards the "vile double-dealers." On November 23, he himself was arrested as the leader of a "Latvian fascist organization", and two days later he gave confessions about how he was recruited by Latvian intelligence. It must be understood that the arrest of one defendant gave rise to a chain reaction of detentions of identified "members of a terrorist organization" and "spy residencies." The Alksnis-Vatsetis case marked the beginning of an action to exterminate Latvians in the Red Army. As well as Poles, Lithuanians and "any other Swedes." In the Far East, an "accomplice" of Alksnis, the head of the Air Force of the OKDVA commander F.A., was arrested. Ingaunis (although he was a Lithuanian), in Orenburg - the head of the military school for pilots, brigade commander R. K. Rataush, in Kharkov - the head of the 9th school for pilots and flight observers, brigade commander Ya.E. Zaks (in addition, his commissar turned out to be a Pole, "who disrupted the work of the party organization to expose the enemies of the people"). Assistant Chief of the Naval Forces of the Red Army for Aviation Divisional Commander V.K. Bergström was Swedish by nationality and spied for Sweden. All the above-named persons were measured out "the highest measure of social protection":

"There is no and cannot be a place on the beautiful Soviet soil for creeping reptiles, traitors, terrorists, people who raise their criminal hand against our great, beloved and dear comrade Stalin."

Together with Alksnis, more precisely, not together, but on the same day, commander V.K., the chief of staff of the Red Army Air Force, was executed. Lavrov - he was also a member of the "fascist organization", only Russian, and the head of the Civil Air Fleet commander I.F. Tkachev - this, according to the indictment, "led the Trotskyist espionage-sabotage organization" in the Civil Air Fleet worked for Hitler. The next Chief of Staff of the Red Army Air Force, Divisional Commander S.V. Testov died in Lefortovo prison. Following the

commanders of the troops of the districts, their deputies, chiefs of staff, heads of political departments, commanders of formations went under the ax and further down the chain "by uprooting and defeating." Marshal Voroshilov, acting hand in hand with the "organs of Comrade Yezhov", who destroyed twice as many Soviet generals as the Wehrmacht, speaking on October 8, 1937 at the analysis of the maneuvers of the Baltic Fleet, said: "The Polish and German spy Uborevich - in the BVO managed to recruit a large number of command and political composition, almost 90% of corps commanders, about the same number of division commanders, some of the regimental commanders. Until the end of the year, 1,205 commanding and commanding personnel were fired from the Air Force, 285 people were arrested. This was just the beginning. In less than a year, the heads of the Air Force were sent to execution: the

Belarusian Military District Commander S.A. Chernobrovkin, Kyiv Military District Divisional Commander A.M. Bakhrushin, Ural Military District Divisional Commander A.T. Kozhevnikov, Leningrad Military District Commander V.N. Lopatin, Volga Military District Divisional Commander F.A. Klysheiko, Siberian Military District Divisional Commander K.V. Maslov, Transbaikalian Military District Divisional Commander I.I. Karklin and the division commander M.N. Shalimo. The latter held his post for thirteen days. The head of the Air Force of the Central Asian Military District, divisional commander

Yakubov. A rare "bastard" turned out to be the head of the Pacific Fleet Air Force L.I. Nikiforov. As the unjust investigation proved, the divisional commander, in case of a war with Japan, was preparing a bombardment of his ships and. flight of naval aviation to the side of the enemy. The participants in the ramified "military conspiracy" and "Japanese spies and saboteurs" were the head of the OKDVA Air Force Commander A.Ya. Lapin, Head of the Air Force of the Primorsky Group of Forces Divisional Commander I.S. Florovsky and the Chief of Staff of the Air Force of the Primorsky Group, Colonel Zh.Ya. Reginsky. Before committing suicide in a prison cell, Lapin "sincerely repented" and surrendered all his accomplices:

"In addition to those recruited by me into the counter-revolutionary Trotskyist organization: DZYZA - pom. Commander OKDVA, PASHKOVSKY - commander of the 18th rifle corps, URALOV - commander of the 110th air brigade and KUTOVOY - commander of the 12th air squadron, I recruited the following people at different times: - 1) early. Air Force of the Primorsky Group OKDVA, division commander FLOROVSKII, 2) flag-navigator of the OKDVA Air Force captain BOGDANOV, 3) commander of the 301st light bomber squadron, Major KOPCHENOV ... Meeting with FLOROVSKII at the same time in 1935 and 1936, he informed me about his counter-revolutionary activities and told me that they the following persons were recruited: - 1) commander of the 29th air squadron IVANOV, 2) commander of the 19th air squadron in Galenki (forgot his last name), 3) beginning. opera. Parts of the Spassky Brigade KOCHENOVSKII, 4) engineer of the Baranovsky airfield, seconded to the headquarters of the Air Force of the Primorsky group - MARCHENKO ...

During the war, the counter-revolutionary military organization was supposed to upset the management of the Far Eastern troops, the participants in the organization had to give such orders and direct the units and troops subordinate to them in such a way as to meet defeat ... My

sabotage work consisted in organizing catastrophes in the OKDVA Air Force. Among the disasters caused by the counter-revolutionary work of the members of the organization are: 1) the disaster in the Spasskaya brigade, 2) the disaster in the VLASOV in the Khabarovsk brigade, 3) the disaster in the METELKIN air squadron in the 3rd light bomber squadron. 4)

catastrophe in 31 squadron and others.

In the above disasters, 6 people died. Of all the disasters in parts of the Air Force for 1934-1936. at least 25% is the result of the sabotage work of our organization."

The commander of the ML was the same "traitor". Gorbunov - Chief of the Air Force of the Baltic Fleet. And he did not escape the "revolutionary

massacre." Commander of the 1st Aviation Army, well-known theorist, one of the creators of the Soviet strategic bomber aviation commander V.V. Khripin, after talking with the Chekists, admitted that he was an agent of the French, German, Italian, British, Czechoslovak and Polish intelligence services. It is possible that he planned to bomb the Kremlin. It is clear that the corps commander alone could not cope with such a volume of espionage work. Soobschnikov - the right hand was the chief of staff of AON-1 "combat brigade terrorist" A.N. Andrianov, and the left head of the political department, divisional commissar I.P. Zykunov - uprooted together with the commander and sprinkled with earth at the Kommunarka special facility of the NKVD. Knowing neither sleep nor rest, the unleashed

heirs of Dzerzhinsky worked: during the day they "stabbed" those under investigation, at night they pierced the backs of their heads. The conveyor worked smoothly: 15-20 minutes for the reading of the verdict - and into the basement. Execution...

Execution... Execution...

Commander Zh.Ya. Poga, commander of the heavy bomber air corps.

Kombrig A.Ya. Tsiemgal, commander of the 9th heavy bomber air brigade

Belarusian Military

District. Kombrig A.A. Zhitov commander of the 15th heavy bomber aviation brigade of the Kyiv IN.

Kombrig N.M. Stakhansky, three times Red Banner, commander of the 18th heavy bomber air brigade of the Kharkov Military District.

Kombrig I.Ya. Samoilov, commander of the 43rd mixed air brigade of the Kharkov Military

District. Kombrig D.M. Rudenko, commander of the 50th assault air brigade

OKDVA. The commander of the same brigade

commander M.M. Ryzhenkov. Colonel N.S. Razumov, commander of the 67th heavy bomber air

brigade OKDVA. Colonel V.I. Adriashenko, commander of the 84th Fighter Aviation Brigade of the Belarusian Military

District. Kombrig M.A. Kagan, commander of the 90th Fighter Aviation Brigade of the

Kyiv Military District. Kombrig G.M. Bondaryuk, commander of the 101st Aviation Brigade

of the Trans-Baikal Military District. Colonel P.A. Sanchuk,

commander of the 110th air brigade of OKVDA. Colonel S.G. Uralov, commander of the 139th high-speed

bomber air brigade of the KBF Air Force. Divisional Commander N.Ya. Kotov,

head of the Lipetsk air force tactical flight school. They "soldered the term" to one of the organizers of the airborne troops in the USSR, the first commander of the 3rd Special Purpose Air Brigade, the chief of aviation of the border troops, brigade commander M.V. Boytsov. They shot the second commander of this brigade, who had grown into the commander of the 5th heavy bomber aviation corps, division commander of the BC Kokhanovsky, the commander of the 13th special aviation brigade, Colonel A.O. Indzer and the commander of the 47th Special Purpose Air Brigade, Brigade Commander F.F. Karmalyuk. In general, they put things in order in the landing troops.

At the same time, educational institutions were cleared of "fascists": the head of the department of general tactics of the Zhukovsky Air Force Academy, Divisional Commander B.Ya. Lavinovsky, head of the department of operational art, Colonel A.S. Algazin, head of the training department of the command faculty, Colonel A.K. Mednis, professor of the same academy and head of the aviation tactics department of the Frunze Military Academy, author of the concept of creating a GA, brigade commander A.N. Lapchinsky. The repression of military theoreticians was followed by the withdrawal from circulation of their scientific works, the content of which was immediately seen as "harmful provisions" and "defeatist moods." To review all military and military-political literature - "in order to cleanse it of politically harmful and outdated" - a special commission was appointed by the People's Commissar of Defense. The time for theoretical discussions was over; the rules of war were now being written in the Kremlin. "Military theory essentially boiled down to making up a mosaic of Stalin's

statements on military issues," writes Marshal M.F. Zakharov. - At the same time (*with the disbandment of tank corps.* - *Auth.*) There were attempts to drastically change the tasks of aviation, reducing them, in essence, to operations only over the battlefield in close tactical connection with the ground forces conducting this battle. Such events testified to the turn of military theory back - to linear forms of struggle on an operational scale.

The French military attaché reported to Paris: "1.

The Red Army probably no longer has high-ranking commanders who would participate in the world war except as soldiers or non-commissioned officers. 2. The military doctrine developed by Tukhachevsky and his entourage, which the instructions and instructions declared wrecking and canceled, no longer exists. 3. The level of military and general culture of the cadres, which had previously been very low, especially fell due to the fact that the highest command posts were transferred to officers who were quickly promoted to command a corps or army, jumped several steps at once and were chosen either from young people whose training left wish the best and whose

intellectual qualities ruled out a critical or non-conformist position, or from among the military, of no value, who were in the public eye during the Civil War and subsequently pushed aside, which allowed them to avoid any contact with the "enemies of the people. **In the current conditions, promotion in the Red Army is a kind of diploma**

about incompetence..."

It was a period when dizzying careers were made, when captains and majors, who had barely mastered the duties of a company, battery or squadron commander, took command of divisions and brigades. A year or two later, they received general epaulets, but what did they understand in the leadership of large formations, were they capable, not to say, of solving tactical and operational tasks, but at least formulating questions correctly? And was it required of them? And what was required of them? By all indications, the main thing was to "breathe properly", in time with the "general line". And they were allowed to think and even ordered to take the initiative later, when the "invincible red regiments" across the Volga caught their breath. Marshal G.K. Zhukov, the brightest representative of the new generation of Stalinist generals about the book by B.M. Shaposhnikov "The Brain of the Army" issued in his memoirs:

"It is a thing of the past, but then, as now, I believe that the title of the book "The Brain of the Army" in relation to the Red Army is incorrect. The "brain" of the Red Army from its first days ... was the Central Committee of the All-Union Communist Party of Bolsheviks, since not a single decision on a major military issue was made without the participation of the Central Committee. The name is more suitable for the old tsarist army, where the "brain" really was the general staff.

As you know, the brain of the Central Committee was in the head of Comrade Stalin, and the Central Committee itself never met during the entire war, since there was no need for it. Meanwhile, in the mid-1930s, foreign observers in their analytical notes argued that "the current Soviet defense plan and the large expansion of the Red Army carried out over the past year or two were entirely born from Tukhachevsky's head." Iosif Vissarionovich read these reports and intended to correct the "wrong situation". And the fact that the disgraced military leaders, instead of simply being fired or imprisoned, were shot, so these are "features of the national hunt."

In July 1937, when the firing at friendly forces in the Red Army was just flaring up, Captain Kootani, assistant to the military attache in Moscow, made a report to the Japanese political and military elite:

"The question arises - was it really necessary just out of antipathy to shoot a whole group in one gulp? Of course, there must be some motive. My personal opinion regarding this motive is that there was no insurrection plan, not even terrorist plans. As far as we can imagine, it is quite possible that military specialists responded to Stalin's attempt to carry out a complete purge among the army with a certain opposition, based on the need not to reduce the combat effectiveness of the army ... You might think that only for such opposition one could not to shoot, but that is what the Japanese think, who judge Russia based on the situation in Japan, while in Russia, in the event of a train collision, the head of the station, who is responsible for this, is immediately shot. Human life is valued cheaply in Russia, and if they tell me whether it is not funny that people are shot for such opposition, I will say that there is nothing funny here, but for Russia it is

quite possible.

Various assumptions can be made, but probably no one will be able to dispute that the current process is connected with the purge carried out by Stalin in the country, in other words, that it is aimed at strengthening Stalin's dictatorship. Today it has become

fashionable to assert that not so many commanders were repressed, not all of them were shot, some were even released and reinstated in the army. Indeed, someone was simply fired for political reasons (and it is very likely that they were later tried as a purely civil person), someone was simply imprisoned, someone was later released under the slogans of "fighting excesses" and "restoring the socialist

legitimacy."

Commander of the 3rd Heavy Bomber Air Corps A.M. Tarnovsky-Terletsky was sentenced to eight years in extermination labor camps, where he died in 1943. In the war with the Germans, he was not useful. Commander of the 4th Heavy Bomber Brigade Commander M.S. Medyansky got off relatively lightly for his connection with the "enemies of the people" Uborevich and Khripin: a broken rib and almost three years in a pre-trial detention center, after which he was reinstated in the army and taught at various aviation schools, but he was also not allowed to go to war. Like the former commander of the 31st fighter air brigade of the KBF Air Force, brigade commander I.V. Sharapov, who received the post of head of the Stalin Naval Aviation School. Colonel P.A., the former commander of the 42nd Fighter Aviation Brigade of the Pacific Fleet Air Force, who served two years in prison, went to his assistants. Fedorov. The former head of the Air Force of the Black Sea Fleet in 1941 headed the Naval Aviation School named after Levanevsky. Kombriga A.S. Zaitsev, who commanded the 3rd airborne brigade, was arrested in 1937 (I don't know what article he was sculpted, but he was arrested for the same ill-fated landing), released in 1941 and made head of the Air Force Department of the Frunze Military Academy (chief of staff Colonel I.P. Yeshurin of the 3rd brigade was shot under a political article). Some were even given the rank of general. So after all, you don't need to kill everyone, it's stupid. Even the ancient Romans knew that in order to quickly raise the morale of the legion, it was enough to behead every tenth

- for example, the remaining nine, and the Bolsheviks

practiced decimations. This last means of restoring order was used in the war in the event of the flight of units from the battlefield. Stalin improved the technique and carried out his "educational event" before the start of the battle. The Leader's motive lay on the surface: to put the "Zhukovs" at the head of the Red Army, thinking first with a party card, and then with their heads. Unanimity, as the basis of combat capability, fear, as an incentive for loyalty. Zhukov's passage testifies that the Leader achieved his goal. True, in peacetime such an army quickly degrades. Its commanders, accustomed to "the totalitarian hard labor of the mind", are not interested in military affairs, and the soldiers perceive the service as a burden. Remaining essentially the commissar of the Civil War, Stalin did not understand that the times when the outcome of the battle was decided by "big

battalions" had irrevocably passed. Potential opponents understood: "Thanks to the current incident, mutual suspicion and anxiety will deepen among the command staff, especially among the top command staff of the Red Army, then, thanks to further repressions, the atmosphere of mutual distrust and anxiety will intensify in the leading stratum of the central administrative bodies. All this harms the spiritual solidarity of the people, and there is no doubt that from the point of view of synthetic defense power or state defense in the broadest sense, the moral weakness of the USSR will increasingly affect, and that the current incident will serve as a source of disaster in the future ... when we have to fight them, we will have to make the most of this weak point of the enemy.

As expected, the repressions in the army gave rise to distrust among the Red Army officers, led to a decrease in the level of their professional training, ruined any initiative and independence.

It was during this period that a catastrophic decline in military discipline was observed, a sharp increase in drunkenness, which even for, in general, always drunk army, acquired unprecedented proportions. On December 28, 1938, order No.-0219 was issued in the People's Commissariat of Defense: "On the fight against drunkenness in the Red Army":

"Recently, drunkenness in the army has become truly threatening. sizes. Especially this evil took root among the commanding staff.

According to far from complete data, in the Byelorussian Special Military District alone over 1,300 ugly cases of drunkenness were noted over 9 months of 1938, in parts of the Ural Military District over 100 over the same period.

cases and approximately the same unsightly picture in a number of other military districts ...

Drunkenness has become a real scourge of the army. Notorious scoundrels and drunkards, in front of their excessively calm bosses, in front of the party and Komsomol organizations, undermine the foundations of military discipline and decompose military units.

A significant part of all accidents, catastrophes and other emergencies are a direct consequence of drunkenness and an unacceptable attitude towards it.

evil on the part of responsible chiefs and commissars ... This suggests

that the tarnished honor of a soldier of the Workers 'and Peasants' Red Army and the honor of the military unit to which you belong is of little concern to us.

Voroshilov's rhetoric about honor sounds especially amusing. Some commanders, waiting for their turn, filled fear with vodka, others resorted to suicide, others "wrapped the bolt into service", but the commander of the 11th heavy bomber air brigade, brigade commander A. I. Orlovsky, exhausted at night listening to footsteps outside the door, wrote a denunciation himself, in which he admitted that he was in a "military conspiracy."

It is quite natural that the decline in professionalism and discipline led to a surge in accidents: the planes burned, exploded, fell, collided, fought on the ground and in the air. In 1936, 280 accidents and catastrophes occurred in the air force, 94 people died. The number of incidents grew steadily, and, of course, they were all the result of the subversive activities of "agents of German-Japanese fascism." On May 25, 1937, Voroshilov signed an order: "On measures to prevent damage to the material part of the Red Army Air Force through malicious intent" : **heavy human casualties. The investigation of these cases has established that our vigilance is still insufficient, that saboteurs and pests, taking advantage of our disorganization and weakness of control, remain unexposed and continue to do their dirty work.** It did

not help: in 1937, 110 people died in 398 accidents and catastrophes. By order No.-0018 dated May 21, 1938, the "Decree of the Main Military Council of the Red Army on accidents in parts of the Red Army Air Force" was brought to the command, political and engineering staff, which spoke of "a huge increase in accidents and especially disasters":

"Despite the fact that the Central Committee of the All-Union Communist Party of Bolsheviks and the Government in 1932, and then in 1936, put before the Air Force of the Red Army in its entirety the question of combating accidents, over the past two years, the accident rate has not only not decreased, but has increased significantly , especially in January,

February and the first half of March 1938. In 1937, the number of emergencies in the Air Force compared with 1936 increased: a) by accidents by 80%, b) by catastrophes by 70%.

Taking into account the "cleansing processes" taking place in the country, the explanation for this was quite expected - the "enemies of the people" are still crap, and the nominees "devoted to the party and the working class" are incompetent:

"1. In a number of units, Bolshevik vigilance was weakened, and party political work was poorly organized. Enemies of the people who have not been completely uprooted in such a situation deftly use the situation, continuing to create their criminal affairs.

2. Military discipline has somewhat weakened, as a result of which the orders and charters of the Red Army, which regulate military order and

relationship between superiors and subordinates. There was laxity and slovenliness, reaching in some cases to a discussion of the orders given by the chiefs. There are cases of familiarity and false democracy. 3. The young commanding and political cadres promoted to

leading positions, devoted to the Party and the working class, possessing high personal qualities, most of them do not yet have practical experience in leadership.

units and formations, cannot concentrate their main attention and time on the most important issues - personal leadership of combat training.

It often happens that they themselves are not yet a model of discipline. The insufficient exactingness of these comrades in a number of cases comes to obvious connivance - violations of charters, instructions and manuals (flight and service laxity, indiscipline). These young commanders need continuous help, guidance and Bolshevik education from senior commanders in command and control.

political line...

12. Military acceptance at factories (21st and 1st factories) for I-16 and R-zet aircraft, in the presence of sabotage at these factories, did not cope with its task, as a result of which the material part with manufacturing defects and the presence of wrecking.

Aircraft, meanwhile, continued to "fall". In 1938, there were 571 catastrophes and accidents in which 273 people died, including the commander of the OKDVA Air Force division commander Sorokin, Heroes of the Soviet Union brigade commander A.M. Bryandinskiy and V.P. Chkalov. According to the Deputy People's Commissar of Internal Affairs M.P. Frinovsky (report dated August 31, 1938), in the Far East, the number of disasters increased by 400% compared to the previous year.

On June 4, 1939, Voroshilov signed order No. 070 "On measures to prevent accident rate in units of the Air Force of the Red Army", which paints a depressing picture:

"The number of flight accidents in 1939, especially in April and May, reached extraordinary proportions. During the period from January 1 to May 15, 34 disasters occurred, 70 people died in them. During the same period, 126 accidents occurred, in which 91 aircraft were destroyed. Only at the end of 1938 and for the first time in the months of 1939. we lost 5 outstanding pilots - Heroes of the Soviet Union, 5 of the best people in our country - vols. Bryandinskiy, Chkalov, Gubenko, Serov and Polina Osipenko.

These heavy losses, like the vast majority of other disasters and accidents are a direct result of:

a) criminal violation of special orders, regulations, flight manuals and instructions; b) the

extremely poor work of the command and political staff of the air forces and the military councils of the districts and armies in educating the flight and technical personnel

of air units; c) poorly organized and even worse implemented planning and consistency in combat training of aviation units;

d) the inability of senior commanders and commissars to establish flight technical training with each crew and pilots individually in accordance with the level of their special knowledge, preparedness, their individual and specific abilities and qualities; e) still unsatisfactory knowledge of the

material parts and, as a consequence, its poor operation and

f) most importantly, the unacceptable weakening of military discipline in parts of the Air Force and laxity, unfortunately, even among the best pilots, not excluding some Heroes of the Soviet Union.

Literally every catastrophe and

an accident, since with the most cursory acquaintance with them, as a rule, the cause is either indiscipline and looseness, or an inattentive and unacceptably negligent attitude to their duties of the flight and lifting and technical staff.

There is not a word about "pests" in the document, and therefore in its order part, along with the requirement to "walk in formation" and sentences like: "Aircraft is a more complicated thing than a steam locomotive", quite specific and practical instructions were given "on the eradication of ugly phenomena leading to a large number of all kinds of incidents. However, as it usually happens with us, the chiefs, in order not to spoil the reporting, took the simplest path: to ban night flights, aerobatics, maneuvering on

low altitude...

Nevertheless, the outrages were eliminated at an unsatisfactory pace, and a year later, the new People's Commissar of Defense, Marshal S.K. Timoshenko had to write a new order "On the tasks of the Red Army Air Force in connection with the high accident rate", it is all about the same:

"From August 1 to August 10, 1940, 28 aviation regiments were checked by my deputies. The audit covered the aviation units of the Baltic, Western, Kyiv, Odessa, Transcaucasian, North Caucasian and Transbaikal military districts. The check was carried out in order to find out the reasons for the unacceptably high accident rate in the Red Army Air Force units. It has been established that the main causes of accidents are:

1. Extremely low discipline, laxity and disorganization in the units of the Red Army Air Force. As a result of weak control, orders, charters and instructions for flight operations that regulate flight work are not firmly and consistently implemented ... A large number of drunkenness with brawls, unauthorized absences and other immoral offenses incompatible with the rank of commander, Red Army soldier, characterize a low state of discipline and give rise to accidents . 2. The organization of combat training in many regiments is

unsatisfactory. The planning of combat training is carried out "outside

time and space", which is a consequence of ignorance of the preparedness of the squadrons and leads to the setting of overwhelming and unrealistic tasks. The squadrons have not yet learned how to approach the pilot individually - to set tasks in accordance with his training, as a result of which accidents and disasters occur ... 3. Navigational

training in most units, and especially in fighter units, is at a low level. Knowledge of the basics of navigation is weak. There is an excessively large number of orientation losses, including

leading command staff. 4. As a mass

phenomenon - poor knowledge of the material part of the flight and technical staff. The pilots and part of the commanders have little knowledge of the data of their aircraft and engine. The pilots, not knowing the material part, are afraid to control the work of the technical staff. The commanders of units and subunits, not knowing the material part of the aircraft and the engine themselves, do not require and do not check knowledge members of their subordinates.

5. A large number of breakdowns, accidents and disasters occur during takeoffs and landings of aircraft. This suggests that important elements of piloting technique, takeoff and landing, have not been worked out by young pilots.

6. Checking the piloting technique is poorly organized, is carried out irregularly and not within the time limits specified in NPP-38 No. 69. A review of flight books showed that the errors noted during the verification of piloting technique are not eliminated, but only fixed, i.e. the most outrageous disgrace deliberately occurs when a pilot with known and uncorrected errors continues to fly on a more difficult task, does not cope with it,

repeats mistakes, hits the plane and dies himself. 1. In

Air Force units, the positions of commanders of regiments, squadrons and units are occupied by commanders who do not have sufficient experience in leading units and subunits. Unit commanders do not have instructor and methodological experience, they do not know how to show and teach their subordinate. The commanders of the air forces of the districts, the commanders of divisions and regiments did not understand the need to especially teach and educate personnel, but left them to themselves. This leads to the fact that the flight and squadron commander does not know how to build work, makes mistakes that cause accidents. The above reasons that give rise to accidents cannot remain in Air Force units and must be eradicated by the most resolute

measures."

The order mentions aviation regiments for a reason. At the beginning of 1938, a new change in the structure of the Air Force began. The size of the fighter squadron was reduced to 15 vehicles, the rest - to 12; the squads disappeared. The main structural unit was the regiment, which consisted of four or five squadrons and a control link. Fighter, assault and bomber regiments in the state had five squadrons, each squadron had four links, plus a communications aircraft - 61 vehicles; heavy bomber regiments - four squadrons, 40 bombers. Shelves could be specialized or mixed. They united in brigades, in which there

were 100-150 vehicles each. All air brigades were supposed to be - 2-4 brigades each - to be reduced to aviation corps. As before, separate units remained - reconnaissance and adjustment squadrons, communication links, etc. The main point of the reorganization was the separation of the rear from the combat units, which increased their operational mobility and mobilization readiness.

According to the mobilization plan for 1938-1939, in the event of war, it was planned to deploy 155 aviation brigades and field 11,000 combat aircraft.

On May 21, by order of NPO No.-0017 dated May 21, 1938, two more separate aviation armies were formed with deployment in Voronezh and Rostov. The same order for the GA established a four-regiment structure with an aviation fleet of 307 aircraft - each regiment had 61 bombers, 15 fighters, 3 control aircraft. Almost simultaneously, six airborne brigades were formed on the basis

of the existing airborne units. They were also separated from the rear, including removing all aviation equipment from transport squadrons, since due to the lack of new bomb carriers, the aviation armies were equipped with elderly TB-3s.

For such interesting cases, there was no time to read the reports of the "volunteers" about the Spanish campaign, no one and no reason. Before any specialist has time to study the material, he is already being dragged to the wall. And the writers themselves, who had been abroad, should first be checked for recruitment by foreign intelligence services. We know the coats of arms of the Spaniards, favored by the authorities and soared to high positions, but the full list of those who participated and died is still not available to us. What borscht, when such things are in the kitchen. Here, Osip Pyatnitsky, a significant figure in the Comintern, was shot on the night of July 29, 1938, and until March 1940 he was a party member and head of the Political and Administrative Department of the

Central Committee of the All-Union Communist Party of Bolsheviks. Therefore, when it "burst out", Soviet fighters still went into battle "in threes", for a long time no longer high-speed SB bombers and flying at the speed of a TB-3 motorcycle were sent on missions in broad daylight in small groups and unaccompanied, "the best in the world attack aircraft" went into battle without having instructions for combat use, not to mention such subtle matters as interaction and coordination of actions with other branches of the military. Colonel General M.M. Gromov, recalling the war,

"The escort of bombers and attack aircraft was decided wrong with us. In these cases, the protection was completely ineffective, since our fighters went to

speed equal to the speed of the bombers. At such a reduced speed, they themselves were the victim of an attack: having no speed, they did not have their main strength - speed and maneuver. A significant multi-tiered excess of height was necessary (when they went in two layers at different heights). In such cases, enemy fighters could not attack our bombers without being attacked by our fighters, which from a height could quickly pick up any speed and stop the enemy attack.

The Germans always flew in fighter aircraft in pairs, it was their main tactical unit. They always flew, keeping the speed at 9/10 engine power. Under these conditions, it was possible to catch up with their fighters only if our fighter was at a height, and much higher than that of the enemy. In addition, the pair had greater maneuverability. The leader in a pair flying at 9/10 engine power has the ability to calmly search for a target: his main attention is paid to this. He has no danger of being attacked from behind. The follower, following behind, observes only the upper hemisphere, since it is impossible to catch up with him either from the side or from behind.

In our case, the smallest tactical unit for fighters was 3 aircraft. This tactical unit deprived them of maneuverability. This parade formation at the front is vicious. The couple is stronger both in maneuverability and focus of attention.

Guidance of aviation to a target from the ground and by 1945 had not really been mastered. From the

memoirs of T.P. Punyova: "The pilot had the command radio station, the RBS-2 liaison was with the gunner-radio operator. The command station was supposed to provide communication between the machines in the air and the pilot with the airfield, and the communications one - "distant" communication with the ground. These radio stations did not have what is called quartz stabilization, they were noisy, phoning, crackling terribly. The command pilots used to turn off the command, because all this roar, noise, cacophony was hard to bear. Communication was disgusting. Sometimes, the command station worked so disgustingly that communication with neighboring machines had to be maintained through a radio operator, this is bad, efficiency disappears completely. In general, going into flight, they never knew how the stations would behave. Either the connection will be bad, roofing felts more or less.

It has never been good ... We often did not hear the Earth, and some of them did not hear us. We have one interesting episode connected with the radio station: when the Berlin operation began, we suffered quite heavy losses. And from anti-aircraft fire, and from fighters. Despite the fact that the war was coming to an end, the Germans flew to the last. The Germans did not fly some kind of chanthrope. If he entered and successfully - then write hello! Somehow two of us were shot down. There is an analysis, all, of course, downcast. The political officer of the regiment, Major Korotov, takes the floor: "Comrade commander," he is addressing the regiment commander, "I suggest: when our pilots are on a combat course or are engaged in air combat, inspiring slogans should be transmitted from the command post: "For the

Motherland! For Stalin!

Forward!" Comments are superfluous. In July 1938, in the Far East, border skirmishes escalated into a military conflict near Lake Khasan, where the insolent Japanese military dared to "poke their pig's snout into our Soviet garden."

A black cloud was
circling At the seaside
heights. The enemy put a
pig's snout into our Soviet garden.

The question of ownership of the two hills was purely technical, quite resolvable through diplomacy. However, Stalin went to the aggravation. One of the motives was his desire to show the whole world that the beating of commanding cadres did not cause any damage to the combat capability of the Red Army. Really,

the flight-technical staff of the Far Eastern Air Force during the repressions lost "only" 840 people. For example, in the 51st Spassk Light Bomber Aviation Brigade, 54 commanders and equipment were arrested within six months, including the brigade commander, chief of staff, assistant brigade commander, brigade engineer, head of the political department, brigade commissar, head of intelligence, head of the operational department, weapons engineer, five commanders and assistant squadron commanders, four flight commanders. In addition, a significant number of command and command personnel of the brigade were fired.

It was generally accepted that as a result of the purge "our ranks were strengthened", the commanding, commanding and Red Army staff and political workers "rallied even stronger around the Bolshevik Party, the Soviet government and the leader of the peoples, Comrade Stalin." At

the spring All-Army Conference of Political Workers, the military commissar of AON-2 Verov ritually assured the beloved leaders of the country: "A special composition of the Far Eastern Army, at the first call of the party and government, is ready to lay down its violent heads for the cause of Lenin-Stalin!".

By the beginning of the conflict, the Red Banner Far Eastern Front had 766 combat aircraft. In Primorye, the 48th assault (on R-10, SSSI R-5 aircraft), the 69th fighter (I-15 and I-16), the 25th high-speed bomber (SB) air brigade, several separate reconnaissance squadrons, armed P-Z aircraft, about a dozen separate detachments and units. They could be supported by units of the Pacific Fleet Air Force and the 2nd Special Forces Army. Since the spring of 1938, new DB-3 vehicles began to arrive at AON-2, but the crews did not have time to master them sufficiently. Aviation of the Far Eastern Front was commanded by the hero of the battles in Spain and China, 27-year-old brigade commander P.V. Rychagov, a Stalinist nominee, who made a rapid career - a year and a half ago he was a senior lieutenant. 180 bombers and 70 fighters took direct part in the Khasan operation.

The enemy, according to intelligence, had up to 70 aircraft, mostly fighters, at the nearest Hunchun airfield.

On July 24, the Primorsky Air Group of the KDF Air Force was put on alert and began to relocate part of the aircraft fleet to advanced airfields. During the relocation, the pilots suffered their first losses: having fallen into the fog, they crashed into the hill of I-16 captain Dmitriev. Temporary sites were

created at the Filippovsky estate, in Knevichi, Novo-Kiev, Barabash. The supply of fuel and ammunition was hastily organized, there was no telephone connection, radio stations were forbidden to use for reasons of secrecy. Aircraft overtook much more than previously planned. There were not enough ground personnel, the understaffing of trucks and special vehicles amounted to about a third of the staff. Due to the small number of gunsmiths, everyone who was at hand, including flight personnel, and even peasants from the surrounding villages, was involved in stuffing cartridge belts. The future Air Marshal G. V. Zimin was then the deputy squadron commander

of the fighter regiment: "Our squadron was relocated to the area of Lake Khasan to the Barabash airfield. Four

more aviation squadrons were also moved there. At a small field airfield, sandwiched on both sides by mountains, there were 75 aircraft. On one side the mountains rose steeply, on the other more gently: a narrow mountain river flowed there. Cars stood back to back along the mountain along the entire length of the runway. There was nowhere to disperse the cars. The runway, squeezed by mountains, was, in fact, an airfield. I flew to Lake Khasan from my old base with the order of the regiment commander to establish contact with the commander of the rifle division

to organize interaction. I made contact, but the situation was unclear, and therefore no clear instructions about

There was no interaction at that time. I was told: "Get an order and you will carry it out. Details will be specified later." I got the impression that the division commander himself did not yet have a clear idea of the situation. That's all I was then

figured out."

In total, the advanced group initially included 21 SSS attack aircraft of the 2nd assault aviation regiment, 56 I-15 fighters of the 40th, 48th fighter regiments and the Pacific Fleet Air Force, 12 SB bombers of the 36th high-speed bomber regiment. By the time the planes of the forward group settled in new places, the conflict was already in full swing. On July 31, brigade commander P.V. Rychagov flew to

the city of Voroshilov and assumed command of the aviation forces in Primorye. The commander of the Air Force of the 1st Army, Divisional Commander Ya.V. Sorokin. On the same day, Rychagov ordered to shoot down all Japanese aircraft that violated the border, and was instructed by Moscow to organize bombing strikes on the territory occupied by the Japanese. However, supply problems and severe fogs delayed the combat mission for a day. Around noon on August 1, a telephone conversation took place between I.V. Stalin, V.M. Molotov and K.E.

Voroshilov with V.K. Blucher. Kremlin strategists demanded that the bombers be immediately lifted into the air and attack the enemy. The marshal, referring to the difficult weather conditions, expressed fears that Korean villages and their own troops could suffer from blind bombardments. Such slobbering humanism made the Secretary General extremely irritated: "Tell me, Comrade Blucher, honestly: do you have a desire to really fight the Japanese? of his debt in view of the fog. Who forbade you not to offend the Korean population in the conditions of a military skirmish with the Japanese? .. What does some kind of cloud cover mean for Bolshevik aviation if it really wants to defend the honor of the Motherland. And, really, why stand on ceremony, in war as in war. Their own Koreans numbering 172 thousand people, on the basis of the decree of the party and government "On the eviction of the Korean population from the border regions of the Far Eastern Territory", have been

safely deported to Central Asia for a year now - they just decided to master the intricacies of rice growing. And all the more I don't feel sorry for strangers, they are all completely Japanese spies.

Blucher had no choice but to order Rychagov to immediately raise "Bolshevik aviation" and attack the samurai, "regardless of anything."

The first raid, which took place at 13.35, was attended by 30 I-15 fighters and 8 P-Z aircraft. They dropped AO-8 and AO-10 fragmentation bombs on Japanese positions, then fired from machine guns. According to ground observers, the falcons poured the bulk of the ammunition into Lake Khasan. At 15.10, from a height of 4000 meters, 24 high-speed bombers from the 25th air brigade of the brigade attacked the Zaozernaya hill and the road near Digasheli in two groups, along which enemy reserves advanced. A total of 66 FAB-100 and 78 FAB-50 bombs were dropped.

Another hour and a half later, two air strikes on the height of 68.8 followed. - a small hill where the Japanese infantry seemed to be located. First, the eight P-Z dropped the bombs. Then 11 I-15 fighters supporting it, which carried four AO-10s, unloaded. Towards the end, 17 SSS attack aircraft and 13 I-15s processed the target with the same AO-10s and machine-gun fire. Some oddity is that height 68.8 is located on the eastern bank of Khasan and is marked on the map as the line of deployment of the 119th Infantry Regiment. Since the infantry did not complain, it can be assumed that they did not hit the height, or they worked out on some other hill. In addition to the fog, the lack of large-scale maps of the combat area greatly complicated the orientation of the pilots. For the same reason, aviation could not provide ground troops with reconnaissance data or issue target designation to artillery; returning from the mission, the pilots could not accurately indicate in which place they observed or attacked the enemy:

"There were also such isolated cases when commanders and navigators of units, flying for the first time to the area of Lake. Hassan, without having previously studied the area and without having a large-scale map with the terrain, definitely did not reach the indicated targets, dropped bombs on secondary targets and areas not occupied by the enemy.

One SB squadron, having lost detailed orientation in the target area, dropped bombs on its territory and only by a lucky chance was not hit by these bombs

our infantry."

The last sortie at the end of the day was made by a dozen SBs from the 3rd Squadron of the 36th Bomber Regiment, starting from Knevichi. She was accompanied by I-15 and I-16 fighters. Efimov-Onisko box cassettes (roughly speaking, a bucket with an opening bottom) were installed in the SB bomb bays, with small AO-2.5 fragmentation bombs (30 pieces per cassette). From a height of 1000 meters they were poured onto Zaozernaya. Each link of high-speed bombers dropped bombs in one gulp, guided by the moment of their separation from the leading aircraft. At the same time, it turned out that fragments of bombs hit their own cars. The plane of the pilot Gavrish suddenly flared up and crashed into the ground, only one crew member managed to jump out with a parachute. The plane of Lieutenant Efimov caught fire and made an emergency landing on a swampy meadow. Brigade commander Rychagov noted that "grenades do not always fall out of the basket reliably" and that he was afraid to bring a grenade on the tail of the aircraft back to the airfield. In total, out of 12 bombers, five were hit by shrapnel. On the plane of flight commander Tarakanov, 73 holes were counted, to which the Japanese had nothing to do, on the pilot Varchenko's car - 35 holes. The front air force command immediately organized an investigation. It was assumed that some of the bombs exploded prematurely, almost immediately after separation from the aircraft. The

reason for this could be defects in fuses. Suspicious fuses were immediately withdrawn from the depots of parts. The AO-2.5 bomb was never used again in this operation. In addition, it turned out that small fragmentation ammunition does not cause significant damage to the enemy, who managed to thoroughly dig into the ground. For this reason, Commander Stern recommended the wider use of high-explosive ammunition. Subsequently, the AO-8 and AO-10 bombs were used only by fighters and attack aircraft, and the Security Council switched exclusively to high-explosive bombs. Rychagov's group operated in conditions of "clear skies", not a single enemy aircraft appeared in the air. The Japanese repulsed the attacks of Soviet aviation with machine guns and anti-aircraft guns. "From abroad" worked two anti-aircraft batteries (a total of 18-20 guns), deployed

in the area of the village of Montokusan and on the banks of the Tumen-Ula River. The successes of the Japanese anti-aircraft gunners were small. One I-15 received a hole, two SBs were slightly damaged by bullets; one gunner-radio operator was wounded in the arm. According to Soviet estimates: "Enemy anti-aircraft artillery, which took part in the battles in the area of Lake. Hasan showed her weak work." Nevertheless, on August 1, the KDF Air Force lost two more SSS attack aircraft, which were destroyed at the airfield in Shkotov by the explosion of their own bombs. On August 2, Soviet aviation began to work from the early morning. The P-Zs of the 21st and 59th squadrons hung in the air all day. They single-handedly

conducted reconnaissance of the combat area and neighboring sections of the border. The fog still interfered with both observation and bombing. At seven

o'clock, 22 SB, 17 SSS, seven P-Z and 13 I-15 came out to Zaozernaya, but fearing to hit their own, they did not dare to bomb and turned back. On the way back, the planes dropped part of the unused bombs at one of the firing ranges, and part - into Lake Talym and into a bay on the ocean coast. Two links landed with bombs, only after that it was discovered that instead of the usual AO-10, fragmentation-chemical bombs AOX-10 were suspended from the holders. The investigation showed that the senior lieutenant sent to the warehouse for ammunition selected the bombs according to the waybill in appearance, without looking at the markings. However, the marking did not tell him anything, just as

warehouse staff, including his supervisor. None of them could distinguish AO-10 from AOX-10.

The second sortie of Soviet aviation for bombing on August 2 took place an hour after the first. Twenty-four SBs struck the western slopes of Zaozernaya from under the edge of the clouds from a height of only 200 meters. The Japanese met the planes with intense rifle and machine-gun fire. On the bomber A. S. Zaporozhchenko, the rudder thrust was interrupted by a bullet. The pilot returned to the Voskresensk airfield near Spassk, but he still beat the car during landing. The PZ planes were the

last to go on a mission. Six cars took off safely from the site in Shkotovo, the seventh crashed into a hill immediately after takeoff and exploded. Six, accompanied by one I-15, dropped AO-10 and FAB-50 bombs on Bogomolnaya Hill.

The real effect of the day of combat work, judging by the results of the offensive of the 40th rifle division, was small. This time,

three Soviet aircraft were damaged by Japanese anti-aircraft gunners. Then the aircraft was inactive for two days due to bad weather. The command of the KDF was worried about the absence of Japanese aircraft in the air. It seemed to the staff of the headquarters that the enemy somewhere was accumulating strength for an unexpected crushing blow. Anti-aircraft artillery and fighters were in a state of full combat readiness. Reconnaissance was carried out along the

border and over the sea. And so, on August 5, a Pacific Fleet submarine stationed in the Gulf of America reported by radio that 98 Japanese bombers were heading towards Vladivostok. Not 90, not 100, but exactly 98! In the area of the city, an alarm was sounded on anti-aircraft batteries, about 50 fighters were raised into the air, and an air alert has not yet been announced in the city itself. However, at the airfield of the Air Force of the Fleet in Vozdvizhenka, the commandant turned on the siren. Panic began in the military camp: "...hearing alarms, all families, capturing children and property, began to run from houses anywhere in disorder with screams." The fighters never found any Japanese bombers. What the submariners saw there is still unknown.

On August 5, the aviators received an order to support the advance of the 39th Rifle Corps by all available means. Powerful aviation training was planned. The commander of the KDF Air Force made a "bold decision" to use heavy bombers and FAB-1000 high-explosive bombs "for the purpose of morally influencing the enemy infantry." The main striking force was 89 SB and 41 TB-ZRN. The operation began after the fog cleared. High-speed

bombers went to targets in groups of 10 to 40 vehicles. Their targets were the Zaozernaya, Bezymyanny and Bogomolnaya hills, as well as artillery batteries on the Manchurian side of the border. The first SBs approached the conflict zone at 15:15. Four groups of high-speed bombers arrived with a small spread in time - five to ten minutes. The last and largest group, which included 44 vehicles, dropped their bombs at half past three. Japanese anti-aircraft gunners managed to shoot down one aircraft. The second, lined, reached the Knevichi. An hour later, TB-ZRN came out to Zaozernaya. The column of heavy ships was accompanied by 25 I-16 fighters. Below was a

group of I-15s. On approach to the target, the aircraft began to accelerate on the decline. When the bombers approached the positions of the Japanese anti-aircraft gunners, 30 I-15s swooped down on the batteries, suppressing them with bombs and machine-gun fire. The return fire was inaccurate. TB-3 "in the ranks, in a detachment, proudly passed over the Zaozernaya height", successfully bombed from a height of 1000 meters, finally dropping six 1000-kilogram bombs. Then they also proudly turned around and went back to Vozdvizhenka. On the retreat, the I-15s repeated their maneuver with an attack on anti-aircraft batteries. Four bombers received minor damage from shrapnel.

"Aircraft bombed brutally ..." G.M. reported to the members of the Politburo. Stern. "It was creepy to watch."

In general, we all liked it: "After the explosion of 1000 kg of bombs, the height of Zaozernaya was covered with smoke and dust for several minutes. It must be assumed that in those areas where these bombs were dropped, the Japanese infantry was 100% disabled from shell shock and stones thrown out of the craters by explosions of bombs. The

ground commanders who observed the actions of the Air Force on 08/06/38 note that these actions of the Air Force made a great impression on our fighters and commanders. Explosions of 1000-kg bombs, the mass of aircraft used on the battlefield showed the fighters and commanders the indestructible strength and power of our Red Army. The

fighters and commanders, believing in our strength, in our victory, with high spirits on 08/06/38, after bombing by aircraft, went on the offensive to the Zaozernaya height, defending their homeland. A general

assault began. Aviation was now working in small groups, supporting the offensive of the ground forces. So, at half past five in the evening, nine SBs bombed the western slope of Zaozernaya. Fighters and high-speed bombers operated over the battlefield until seven in the evening. A total of 1592 air bombs were dropped with a total weight of 122 tons. During the battle, Soviet

troops marked their positions with white banners, the pilots worked very carefully, not a single case of a strike on their own was noted. The next day, making sure that there were no Japanese

fighters, the I-15 biplanes began to be used only as attack aircraft. Group after group went to "iron" the positions of the enemy. The blows were delivered from the smallest heights both on the front line and on the other side of the border. By half past twelve, the planes had dropped 128 AO-10 bombs and fired 40,000 rounds of ammunition. At the same time, up to 40 I-15s were in the air. Storming continued until the evening.

Sat appeared in the air in the afternoon. They were switched to attacks on artillery positions and concentrations of enemy infantry in the rear. They even bombed individual guns on the banks of the Tumen-Ula. In total, 115 SBs worked that day. From half past seven in the evening, I-15s began constant patrolling of the front line. The units succeeded each other and independently chose targets for themselves. Aircraft dispersed gun and machine-gun crews, shot groups of Japanese soldiers.

On August 8, emphasis was also placed on the actions of attack aircraft. Only I-15s made 110 sorties. They successfully suppressed enemy batteries, forcing the calculations to scatter or hide in shelters. During daylight hours, traffic on the roads in the rear Japanese completely stopped - the planes were chasing even small groups of people, individual carts or horsemen. Enemy soldiers moved only off the roads.

SSS stormtroopers attacked infantry west of Bezymyannaya and artillery in the Nanbon area. They dropped 256 AO-10 bombs from internal cartridges and fired 10,390 bullets. The enemy's lack of sufficient anti-aircraft weapons allowed attack aircraft to work from low altitudes, using the power of their machine gun weapons.

Security forces flew in small groups against artillery positions in the areas of Namchensandong, Chuyusandong and

Homoku. At 15.15 on August 8, the headquarters of the Far East Fleet received a telegram from People's Commissar Voroshilov, in which he forbade the massive use of aviation in the future. The telegram literally said: "... flying in a crowd without much sense is not only useless, but also harmful."

The next day, the intensity of Air Force operations dropped sharply. Have done everything 16 sorties: I-15s conducted reconnaissance.

On August 10, the I-15 was again used to suppress the fire of Japanese batteries. Having identified their location, the aircraft marked the positions with bomb explosions (using the same AO-8 or AO-10), and then made four or five approaches to shelling. Then along the spotted position

artillery began to work. This tactic proved to be effective. They also tried to carry out the adjustment of artillery fire from the P-Z aircraft, but unsuccessfully - the radio station broke down. Although only 34 I-15s were deployed, enemy artillery stopped firing on almost the entire front. Japanese anti-aircraft gunners managed to shoot down one fighter: Lieutenant Solovyov's plane crashed in Tumen-Ula, the pilot died.

From noon on August 11, a new order by Voroshilov began to operate, prohibiting the flight of the state border. Since the Japanese were forced out just on this very line, the order meant the actual cessation of aviation. In just ten days of fighting near Lake Khasan, 1003 sorties were made. 4265 bombs of various

calibers with a total weight of almost 209 tons were used up. The enemy shot down one SB and one I-15, 18 I-15s, seven SBs and four TB-3s were damaged. Two more I-15s were lost for non-combat reasons. After the cessation of hostilities "on the border of Stalin's land", Soviet air units in Primorye continued the usual process of training and patrolling the border strip. An additional burden

for the bombers was the delivery of food to the border. They brought crackers, butter, cereals and shag. The fact is that prolonged rains led to flooding, and parts of the 39th Rifle Corps were cut off from supply bases. There were two ways to provide them: by sea through Posyet Bay and by air.

The bulk of the cargo was delivered by heavy bombers. They dropped special packages - cargo bags. On August 20, an unpleasant incident occurred during these operations. Seven TB-ZRNs from the 3rd Squadron of the 10th Heavy Bomber Regiment were supposed to transfer food to the Malaya Savelovka area. But the navigator of the squadron, Captain Ibatulin, got lost. As a result, the planes penetrated 8–10 km into Manchurian territory in the Saldingou area. When the error was revealed, the bombers turned back, but on the way to the border they were fired upon by Japanese anti-aircraft gunners from guns and machine guns. Several cars received holes. The damaged plane of the commander of the detachment, Senior Lieutenant Mityanin, made an emergency landing near Mount Sugar Loaf. In general, the conflict at Lake Khasan for Soviet aviation was more like an exercise in a situation close to combat. It was her actions that made it possible to reduce the number of victims of the Red Army. Therefore, in the devastating order of the People's

Commissar of Defense No.-0040 of September 4, 1938, dedicated to the "huge shortcomings" in the state of the Far Eastern Front and the "unacceptably low level" of combat training of the troops, the actions of the Air Force received a rather high assessment. It noted that "the Japanese were defeated and thrown out of our borders only thanks to the combat enthusiasm of the fighters ... and also thanks to the skillful leadership of operations against the Japanese, comrade. Stern and the correct leadership of Comrade. Rychagov by the actions of our aviation. After the disbandment of the Far Eastern Front, brigade commander Rychagov was appointed commander of the Air Force of the 1st Separate Red Banner Army, and in October he was awarded the second Order of the Red Banner.

Having punished the uninvolved and condemned just anyone, the Kremlin calmed down and came to the conclusion: "In the battles with the Japanese at Lake Khasan, commanders, commissars, political workers and Red Army soldiers showed not only military enthusiasm, readiness to sacrifice themselves, defending the honor and inviolability of the territory of their great socialist Motherland, **but also the ability to defeat the enemy.**

The steel infantry fought valiantly, And the
cannons hit the enemies without a miss,
And the mighty flocks of Soviet eagles
poured down the heights with a shower of fire.

In the order of the People's Commissar of Defense No.-113 "On the combat and political training of troops for the 1939 academic year", the task was in the first place:

"To complete the Bolshevization of the entire Red Army. Raise even higher the revolutionary vigilance of every commander, commissar, political worker, chief and Red Army soldier. **Vigilantly see to it that the ranks of the Red Army are completely cleared of enemies of the people.** To equip the commanding cadres of the Red Army, party and non-party Bolsheviks with Marxist-Leninist theory, knowledge of the laws of social development and political struggle, taking as a basis the study of the "Short Course in the History of the CPSU

(b)". At the 18th Congress of the All-Union Communist Party of Bolsheviks in March 1939, Voroshilov reported with inspiration about the unheard-of increased power of the Red Army in general and the air forces in particular: over 500 km per hour and altitude over 14-15 thousand meters. On the Khalkhin-Gol River, unlike Hasan, Japanese aviation was by no means idle, and the very first air

battles revealed its superiority over the Soviet one. Parts of the 57th Special Corps were to be covered from the air by the 100th Air Brigade under the command

of Colonel Kalinychev, which included the 70th Fighter Aviation Regiment (14 I-15bis fighters and 24 donkeys type 5 and 6) and the 150th mixed regiment (29 SB and 15 R-5Sh). The bombers were based at airfields in the Bain-Tumen area, more than 300 km from the conflict zone, and the fighters were based at the Tamtsag-Bulak airfield, located 100 km from Khalkhin Gol. All machines, with the exception of brand new ones and insufficiently mastered by the SB crews, were badly worn out, many were out of order. The same can be said about the personnel of the brigade and its command, languishing from idleness in the Mongolian outback: "ugly leadership", low discipline, lack of regular combat training, the pilots somehow mastered the technique of single piloting, but did not know how to fly in formation, bad they were guided by the terrain, did not know the likely enemy, "did not have the skills of aerial shooting." The headquarters of the corps believed that the main operational direction in the theater was the South Gobi,

warehouses were equipped there, most of the emergency supplies and vehicles were concentrated. In the Khalkhingol direction, no bases, nodes, communication lines, airfield sites were prepared, no calculations were made for the concentration and deployment of forces. To be honest, none of the red commanders, even the Mongol ones, had ever been in the "unpromising" region of Khalkhin Gol and could find it on the map with great difficulty. By the way, when needed, and the cards were hard to find. Everything turned out, as in Gaidar's "Malchish-Kibalchish": "Trouble came from where they did not expect, the damned bourgeois attacked us." The Japanese, on the other side of the border, had two railways, a network of dirt roads and an operational air

group of Colonel Koziro Matsumuro - 20 Ki-27 fighters (received the designation I-97 in the USSR), 6 Ki-30 bombers and 6 Ki-15 reconnaissance aircraft. The planes were stationed at the airfield of the Manchurian city of Hailar, about 160 km northeast of the river. The pilots had rich experience of the war in China.

On May 21, the Japanese shot down a Soviet R-5 aircraft that was communicating with the 6th Mongolian Cavalry Division. The next day, the first mid-air collision took place over Mount Hamar Daba. From the Soviet side, three I-16 fighters and two I-15bis took part in the battle, from the Japanese side - five fighters. In the ensuing battle, the I-16 of Lieutenant I.T. burned down. Lysenko.

Both sides were building up their forces. By May 26, the 22nd Fighter Aviation Regiment of Major Glazykin (63 I-15bis fighters and newer I-16 type 10) were transferred from the Trans-Baikal Military District to the Tamtsak-Bulak area. Arithmetically, the regiment was an impressive force with good materiel, but the negative consequences of the campaign to combat accidents were already noticeably affecting the level of training of pilots: pilots were not trained in air combat techniques "because of the fear of flight accidents." A few days later, the 38th high-speed bomber regiment arrived in Mongolia under

command of Captain Artamonov (59 SB vehicles). During the redeployment, one bomber crashed and one fighter went missing. The enemy also

received reinforcements; on May 24, two Ki-27 squadrons (20 vehicles) flew to Hailar. By May 27, the Japanese air force consisted of 52 fighters, six reconnaissance aircraft and six bombers. They were opposed by 203 red-star combat aircraft: 99 fighters, 88 high-speed bombers and 16 "light attack aircraft" R-5Sh. Thus, the Soviet Air Force had more than a triple numerical superiority.

By this time, the ground units of the Soviet troops had entered the battle, crossing Khalkhin Gol and entrenched themselves on the

eastern coast. On May 27, the I-16 squadron of the 22nd Air Regiment under the command of Senior Lieutenant Cherenkov, consisting of eight aircraft, relocated to the forward airfield near Mount Khamar-Daba, with the task of intercepting enemy aircraft. During the day, the squadron made four alarm sorties. In the first three, the enemy could not be found, but two pilots burned the engines of their cars and made an emergency landing. For the fourth time, six donkeys took off to intercept nine Ki-27s and were mercilessly beaten. After the first attack, the "Stalin's falcons" fled, and the enemy, keeping the excess, pursued them to the very airfield and shot them after landing. As a result, the Japanese, having no losses themselves, destroyed three and damaged two aircraft. Two Soviet pilots were killed (including the squadron commander), one was wounded. The next morning,

May 28, the Japanese attacked the positions of the Soviet-Mongolian troops on the bridgehead. The Soviet side did not expect such a dirty trick at all: the planes were not ready to take off, some orders canceled others, only three I-15 fighters were sent to the front line, which, as expected, did not return to the base. At about 10 o'clock "to cover the ground troops and destroy the air enemy" a dozen I-15bis commander Balashov flew out.

Over the crossings over Khalkhin Gol, she was suddenly attacked by 18 Ki-27s. As a result, six "hawks" were shot down, another one, who managed to land, was shot and burned on the ground. Four pilots were killed in action, one was missing, two were wounded, and one pilot parachuted out of a burning plane. The enemy again left without loss.

The corps commander, Divisional Commander Feklenko, reported to the Chief of the General Staff of the Red Army Shaposhnikov the following:

"I ask you to give an answer immediately, as this is related to the planning of the battle 29
May:
1. Enemy aviation dominates the air. Western bank of
the river Khalkhin-Gol is completely open and does not allow any maneuver, with the
exception of the Dzuk-Khan-Ula mountain area, where the terrain is easily crossed. 3. Our aviation
is not able to
cover the ground troops before the capture of the crossing ... 4. Hold the eastern bank of
the river.
Khalkhin Gol is possible, but with heavy losses from enemy aircraft. 5. I ask you to withdraw
units to the western coast
at nightfall and defend it by bombing the enemy ... (with) the task of destroying the enemy's
manpower.

The Japanese all-metal fighter-monoplane "Nakajima" Ki-27 (maximum speed 450 km/h at 3500 m), armed with two 7.7-mm synchronous machine guns, was distinguished by excellent maneuverability and rate of climb, combined with high stability and ease of control, and their pilots had excellent skills. The disadvantage of the fighter was rather weak armament, the absence of an armored seat and gas tank protection. But all Japanese vehicles were equipped with radios, and starting with the flight commander, with transmitters.

The control of Soviet aircraft in the air was carried out according to the principle "Do as I do", the fighters did not have radio communications, since in 1939 there was no consensus on this matter. The Air Force Research Institute insisted on equipping fighters with both communication and navigation radio equipment, and, for example, the heroic guy P.V. Rychagov suggested removing "extra" instruments from the fighters so that they "do not interfere" with the pilot in the air. Naturally, in an air battle, control of the group was lost almost instantly, and the leader turned into an ordinary pilot. Guidance of fighters from the ground was carried out by laying out white panels in the form of arrows, pointed in the direction where the air enemy was seen (Deputy Chief of Staff of the Red Army S.A. Pugachev in September 1925, reporting on the results of maneuvers in three military districts, noted: "Especially noteworthy is the primitiveness of the means used to communicate aviation with ground forces. In this respect, the Red Army lagged far behind Western Europe. "In fourteen years, nothing has changed" in this regard. "And commander S.A. Pugachev was reminded that he was he was not just a deputy, but a deputy of the "head of the fascist conspiracy" Tukhachevsky, "servantly serving capitalism" In October 1939, Semyon Andreyevich was sentenced to fifteen years of captivity, where he died).

According to our pilots, the Ki-27 "successfully fought the I-16M-25 and easily beat the I-15."

The tactical training of Soviet flight and commander personnel was not up to par. In addition, the "treacherous enemy" used his aircraft in large groups, and the command of the Air Force of the 57th Special Corps raised from 3 to 10 vehicles into the air. In just a week, the 100th air brigade lost 16 fighters, 1 attack aircraft, 11 engines and 10 pilots. In addition, there were 4 crashes, 9 accidents and 13 aircraft breakdowns. "Stalin's falcons" lost dry to the "imperial". As frankly stated in the secret "Description of the fighting in Mongolia": "The air force of the 57th Special Corps suffered a clear shameful defeat ... Japanese bombers bombed our troops with impunity." Until mid-June, Soviet aviation did not appear in the Khalkhin Gol area. Discouraged by

the unpleasant results, the Moscow leadership took urgent measures to strengthen the Air Force grouping in Mongolia. At the beginning of June, a special group of 48 most experienced pilots and specialists arrived in Tamtsak-Bulak, who had completed combat school in Spain and China (almost half consisted of Heroes of the Soviet Union), led by the Deputy Chief of the Red Army Air Force Commander Ya.V. Smushkevich. They immediately set about restoring order in the units, combat training of pilots, organizing supplies, and preparing new landing sites. Smushkevich took command of aviation. Divisional commander G.K. Zhukov took command of the entire Soviet-Mongolian grouping.

By June 21, there were 150 fighters, 135 bombers, 15 attack aircraft - 300 combat vehicles at field airfields in the Khalkhin Gol area. Fighters were mainly based on forward sites (25-50 km from the front line), and bombers - at a distance of at least 150 km. The forward command post was located on Mount Khamar-Daba, the rear - in the area of Tamtsak-Bulak. The enemy air force consisted of 126 aircraft,

including 78 fighters and 30 bombers. Most Japanese aircraft were based at Hailar and Changchun airfields. The second of them was located almost 600 kilometers from the combat area.

In the twentieth of June, "local battles" took place on the land front, and over the Mongolian steppes, in the meantime, the largest air battle flared up, during which Soviet aviation tried to take revenge. On June 22, a total of 105 Soviet

fighters took off from various airfields and headed for the Khalkhin Gol region and Lake Buir Nur. The first to enter the battle was a group of the 22nd regiment, consisting of a squadron of senior lieutenant Savkin (15 I-16) and

squadron of Captain Stepanov (nine I-15 bis). Over the Khabar-Daba mountain, "at least 30 aircraft" of the enemy fell on them from above. Commander Savkin was immediately wounded and left the battle, and his subordinates - "do as I do" - took this as a signal to retreat and scattered in different directions. The Japanese burned Savkin's plane on the ground, but the senior lieutenant remained alive. Then the "samurai" switched to biplanes and shot down three "encores". At that moment, a squadron of "donkeys" of the 70th air regiment appeared on the horizon, and the enemy, without engaging in battle, flew to his territory. A little later, two more groups of Soviet aircraft met with a group of Japanese in the area of the mountains of Bain-Tsagan and Bain-Khoshu. In the ensuing battle, 13 I-15bis and three I-16 fighters were shot down. The commander of the 22nd Fighter Regiment, Major Glazykin, and five more pilots, as well as five pilots from the 70th Regiment, were killed in the battle. In the end, the Japanese fighters, having used up

fuel and ammunition, "took flight." According to the Soviet version, the enemy, having "about 120 aircraft", lost 25 fighters that day (then they counted and received 31), our losses amounted to 17 aircraft and 11 pilots. The Japanese, who had only 18 serviceable Ki-27s in the morning, chalked up 57 Soviet aircraft to their account, writing off irretrievably seven of their aircraft and four pilots. In general, both sides considered themselves winners and in the reports they gave full rein to their fantasies. Having received an unexpectedly strong rebuff, the Japanese command urgently transferred another 59 fighters to forward airfields.

On June 24, battles for air supremacy flared up again. In the morning, two eight I-16s and nine I-15bis of the 70th air regiment flew out to intercept twenty Japanese fighters that appeared over Khalkhin Gol. According to the Soviet pilots, seven enemy planes were shot down. The Japanese managed to shoot down two I-15bis. In the afternoon, for the first time, SB bombers went on a combat

mission: 23 vehicles of the 150th regiment successfully bombed the Japanese troops on the eastern bank of the river and returned without loss. In the evening, another air battle took place, in which 54 Soviet fighters and about 40 Japanese took part. At the end of the day, each side lost two cars with two pilots and reported on the "destruction" of 16-17 enemy vehicles. On June 26, 81 Soviet fighters and 60 Japanese fighters clashed over Lake Buir-Nur. In order to change the balance of

power, the command of the Kwantung Army decided to launch a surprise attack on the airfields where Soviet aviation was based. In the early morning of June 27, 30 bombers under cover of 74 fighters attacked the parking lots of the 22nd Fighter Aviation Regiment in the Tamtsak-Bulak area and the 70th Fighter Aviation Regiment in the Bain-Burdu-Nur area. The Japanese managed to

achieve tactical surprise, the "donkeys" of the 22nd regiment took off already during the raid. However, the "samurai" were bombed extremely badly - they practically did not hit the airfield. In a short "counterattack", the Soviet pilots shot down two enemy fighters and two bombers, losing three of their own. The 70th regiment was less fortunate: 14 aircraft were destroyed on the ground and on takeoff - nine I-16s and five I-15 bis, regiment commissar Mishin and six pilots were killed. At 1300, the Japanese raided the Bain-Tumen rear airfield, where SB bombers and a group of cover fighters were stationed. Here the "samurai" "missed" again, the Soviet losses amounted to one I-15bis and one killed minder. In total, at the end of the day, the Soviet aviation group missed twenty combat vehicles. It can be said that they were lucky, since the Japanese bombed from high altitudes and did not practice attacking ground targets with fighters.

The headquarters of the Kwantung Army, to celebrate, trumpeted the destruction on the ground and in the air of 148 Soviet aircraft. TASS issued a refutation stating: "Two houses in Bain-Tumen were damaged by the bombing, while 5 people were injured." The Pravda newspaper responded on June 29 with the article "Ignorant braggarts from the headquarters of the Kwantung Army", ridiculing "modern Munchausen trying to pass off black as white" and citing "true losses" on both sides from June 22 to 28: Japanese

- 90 aircraft, Soviet - 38.

Propaganda is propaganda, but it can be stated that, despite the quantitative and qualitative growth, in June the Soviet Air Force failed to turn the tide of the air battle in their favor. Combat losses amounted to 44 fighters - the Japanese lost half as much. The biplane I-15bis showed its inability to fight on equal terms with the Ki-27; he was inferior to the "Japanese" in all respects, except for firepower, and low speed did not allow him to catch up with the bombers. Subsequently, the "encores" remaining in service were gradually withdrawn from the regiments, forming airfield cover squadrons from them.

The level of flying skill, excellent shooting skills of most Japanese pilots at the beginning of the conflict were noticeably higher than that of Soviet aviators. Colonel Kutsevalov pointed out in his report: "Japanese pilots are well trained in group air combat. They follow the rule "to beat not the one who beats you, but the one who beats your comrade", demonstrate the principle of mutual assistance, at critical moments throwing their victim to rescue a comrade ... The enemy always strives for height, surprise, secrecy. Thanks to this, for quite a long time, "air supremacy of a numerically smaller enemy remained with him." A veteran of the Spanish war, Senior Lieutenant Yamanov wrote: "Samurai always have an advantage in height, do not attack at the sight of a large group, but have loners who jump out, give a burst and get back into line. In a broken formation, they always climb up. They shoot from any positions"; we have the same: "The leaders of the groups, seeing the enemy, walk at full throttle, stretch the group, enter the battle uncompactly and often from unfavorable positions ... They were more afraid of their own than the enemy, and it was difficult to choose a target. They chased single planes in large groups, interfering with each other. In Soviet flying schools and units, group interaction techniques were practically not practiced. "We teach a lot of

individual combat of individual aircraft, but they don't teach group combat. And on Khalkhin Gol, all the battles

are in large groups," wrote the pilot Filippov. Senior Lieutenant Bobrov: "It was striking that the I-97s were always 500-1000 meters above us." Right in the war, they learned to keep the formation, use the sun and clouds for a sudden strike, correctly distribute forces, take into account lead-offs when firing, separate battle formations in height and not rush headlong into an attack.

In early July, Soviet aviation in Mongolia received samples of new equipment from the Union: 20 "secret" I-153 Chaika biplanes (at first they were even forbidden to cross the front line) with a more powerful and high-altitude M-62 engine and seven cannon I-16P. In total, there were about 300 aircraft, the number of Japanese aviation intelligence was estimated at 312 aircraft and was tripled.

On July 2, the "second period of the Nomonhan Incident" began. Under the cover of a distracting frontal attack on the Soviet bridgehead, the main grouping of General Kobayashi, having made a roundabout march, crossed Khalkhin Gol on the night of July 3, occupied Mount Bain-Tsagan and moved south to the Soviet crossing. At dawn, aviation entered the battle. Japanese bombers made sorties in support of their ground forces, losing four aircraft from anti-aircraft fire and fighter attacks. At 11 o'clock G.K. Zhukov launched an 11-10 tank brigade into a counterattack, while 73 SBs simultaneously dropped bombs from a height of 3000 meters on enemy positions near Khalkhin Gol, Khailastyn Gol and Lake Yanhu. At 5 p.m., the bombers of the 150th regiment made another raid. The enemy managed to shoot down three SBs. Several times during the day, the Japanese positions on Mount Bain-Tsagan were stormed by I-15bis. Fierce battles raged for another two days and ended in the defeat of the enemy. According to the results of the "Bain-Tsagan battle", Soviet losses amounted to 16 vehicles, including 12 bombers. The Japanese acknowledged the loss of four of their aircraft.

C B could no longer break away from enemy fighters due to speed, which was instantly confirmed in several skirmishes, where Ki-27s were able to intercept groups of bombers coming without cover. In addition, the bomber group had

SB with M-100 and M-103 engines, and the entire "squadron", observing the formation in the air, was forced to equal "on the last". As a result, the flight took place at altitudes of 4000-4500 meters at speeds of 280-300 km / h, and the cars became the prey of anti-aircraft artillery, especially since the anti-aircraft maneuver "at school" was also not taught. Due to the significant losses of the SB, it was ordered to raise the bombing ceiling to 7000 meters, which could not but affect the effectiveness of the application, and to accompany them with a strong fighter escort. Yes! The bombers did have walkie-talkies, but they were not used to communicate with the ground and aim at the target - this was prohibited due to fear of radio

interception. Heavy TB-3s were also used at Khalkhin Gol, which made up a separate detachment of night bombers numbering 23 vehicles, which was headed by Major Yegorov. They joined combat work on the night of July 7-8. Having loaded two tons of "payload", the planes flew out on a mission at dusk in groups of 3-9 cars, but each carried out bombing individually from a height of 1500-2000 m. The actions of TB-3 were mainly harassing and continued until the end of August. During this time, they made 160 sorties, only one "ship" was lost, which crashed during landing. In addition, a group of old aircraft with M-17 engines was used for medical and cargo transportation. On July 15, the 57th Special Corps was transformed into the First Army

Group, which was headed by Divisional Commander G.K. Zhukov. Brigade commander A.I. became the commander of the Air Force of the 1st AG. Gusev, and the commander of fighter aviation - Major I.A. Lakeev. New squadrons and individual pilots, arriving from the territory of the Soviet Union, joined the 22nd and 70th Fighter Aviation Regiments.

On the morning of July 21, the largest air battle since the beginning of the conflict took place. From the Soviet side, 157 aircraft participated - 95 I-16s and 62 I-15bis, from the Japanese - more than 40 fighters. The battle that began in the area of Mount Bain-Khoshu soon spread to a large area on both sides of the front line and broke up into a series of separate battles that lasted more than an hour and a half. Five I-15bis and four Ki-27s were shot down. The next day, three air battles took place, in one of which the pilots of the 56th Fighter Wing, who had just arrived at the theater, made their debut - the total score was 4: 4. The Japanese probably had some kind of national holiday that day, otherwise it is impossible to explain from what hangover did they report the destruction of 52 donkeys and 11 SBs!

However, the 38th Regiment continued to suffer losses. Only on June 24, as a result of enemy action, 9 bombers and seven crews were killed. The fighters of the 56th Regiment, which provided cover, did not cope with their task and themselves lost 4 vehicles. The Japanese shot down two fighters and two bombers.

On July 29, Soviet pilots finally got even for losses and failures in previous battles. At 7.15 in the morning, 20 cannon and machine-gun I-16s from the 22nd regiment attacked a field airfield north of Lake Uzur-Nur. On the airfield, 11 Ki-27s were preparing to take off. The attack took the Japanese by surprise. From the cannon bursts, the gas tanks of two fighters exploded. At 0940, two squadrons of I-16s struck again. This time they attacked the Japanese fighters at the time of the landing approach. Three Ki-27s were shot down, and one more burned to the ground. As a result of these raids, the enemy lost six vehicles, five were seriously damaged. On the same day, the Security Council bombed enemy troops and warehouses in the Nomon-Khan-Burd-Obo area, three "hawks" did not return from the mission.

In July, Soviet combat losses amounted to 79 vehicles, including 24 high-speed ones. bomber, Japanese - 41 aircraft.

The Soviet side gradually realized its numerical advantage, "account" in air fights leveled off. New squadrons

of I-153 and I-16 type 18 with the M-62 engine were constantly arriving from the Union, as well as an experimental group of top secret donkeys armed with RS-82 rockets. Bomber aviation was replenished with the 56th bomber regiment from the Belarusian military district. Is it true,

bombers "with speeds far exceeding 500 km per hour", Voroshilov did not send. By August 1, the aviation

of the 1st Army Group consisted of 525 aircraft, including 321 fighters. In the frontline zone, the construction of new airfields and landing sites continued, the network of VNOS posts was significantly expanded, interaction between aviation and ground forces improved, representatives of the Air Force were appointed to the infantry and artillery units, and logistical support was established. A special detachment of camouflage engineers arrived to equip false airfields with 75 mock-ups of I-16.

The Japanese threw in two more fighter squadrons and brought the number of their aviation grouping up to 200 vehicles.

On August 2, 23 I-16s from the 70th regiment, under the cover of 19 "gulls", launched a sudden assault attack on the airfield 18 kilometers north-west of Jinjin-Sume and, as in exercises, shot down enemy aircraft standing on the "line", destroying six cars and damaging the rest. Two major air battles took place on August 5, August 12, 137 I-16s from all three Soviet regiments fought against about 60 Japanese fighters. According to Soviet data, 11 Ki-27s were shot down in the battle. Ours lost two planes and one pilot. On August 19, the pilots of the 22nd regiment again stormed the Japanese airfield and burned two enemy fighters. On the same day, the Security Council bombed the Khalun-Arshan railway station, through which the main supply flow of the Japanese front-line units went.

On the eve of the general offensive prepared by the headquarters of G.K. Zhukov, the Soviet aviation group reached its maximum strength - 580 combat vehicles and seized air supremacy.

On August 20, Soviet-Mongolian troops began an operation to encircle and destroy Japanese troops on the eastern shore of Khalkhin Gol. At 5.45

am, 150 bombers attacked the Japanese positions under the cover of 144 fighters. SB bombed aimingly, from heights from 2500 to 3000 meters. Special assault groups I-16 with a total number of 46 aircraft suppressed the fire of anti-aircraft artillery. During the raid, not a single Ki-27 appeared over the battlefield. 15 minutes before the end of artillery preparation, a second wave of bombers appeared over the battlefield - 52 SBs, accompanied by 162 fighters. During two massive raids, not a single Soviet aircraft was lost. In addition, our pilots carried out another successful attack on the advanced airfield and burned five fighters in the parking lots, as well as a Ki-34 twin-engine transport aircraft, nine more Ki-27s were damaged. On August 21, the Soviet offensive continued. The troops of the 1st Army Group, with two enveloping strikes from

the north and south, sought to encircle the Japanese grouping. Trying to regain lost superiority, the command of the Japanese Air Force decided to inflict a series of massive strikes on Soviet airfields. The operation involved 24 Ki-30 single-engine bombers, 12 Ki-21 twin-engine bombers and 15 Ki-36 attack aircraft. The fighter escort was provided by 88 fighters. The first wave started at dawn. The enemy was detected in advance by VNOS posts, the Soviet fighters met the attackers already in the air. An air battle broke out 15–20 km north of Tamtsag-Bulak, in which 123 I-16s, 51 I-153s and 30 I-15bis took part on our side, and up to 50 bombers and up to 80 Ki-27s from the Japanese side. According to Soviet data, 11 enemy fighters and two single-engine bombers were shot down in the battle. Our losses are six fighters and three pilots. Part of the bombers nevertheless broke through to the airfield, but only one of the bombs they dropped hit the target, destroying the Security Council. Approximately an hour later, 32 I-16s from the 56th air regiment took off towards the second wave of bombers - 20-25 aircraft. This time, the Japanese were intercepted over the eastern shore of Khalkhin Gol and three bombers were "cut off". At 14.45, 58 I-16s and 11 I-153s from the 22nd regiment, flying out to attack, met another group of Japanese, in which there were approximately 15 bombers and 25 fighters. Red star machines rushed into

attack and, according to pilot reports, shot down three Ki-30s and seven Ki-27s without loss. The last air battle took place at about 17:00 - 52 I-16s and eight "gulls" met about 60 enemy aircraft over the banks of Khailastyn-Gol and shot down two, losing one.

The main outcome of the day was that the attempt of the "samurai" to seize the initiative ended in failure, although they announced the destruction of 84 Soviet aircraft, including 19 bombers. In fact, Soviet Air Force losses were seven fighters and five SBs, with four bombers shot down by anti-aircraft fire.

From August 22, the Japanese redirected their bombers to support ground troops, but did not succeed in this either.

A new "splash" of air battles was noted on August 25 - the decisive day of the Soviet offensive operation. On this day, an encirclement closed around the Japanese group on the eastern shore of Khalkhin Gol, and the air, according to the memoirs of Konstantin Simonov, "simply boiled with airplanes":

"There was a lot of aviation on both sides, and for the first two months the superiority was on the side of the Japanese, and only in the third month, after a stubborn struggle, it passed to us. By the end of the fighting, a particularly large amount of aviation was collected from our side. On the first day of our August offensive, we scrambled almost a thousand aircraft into the air. As for the air battles that took place over the steppe, then I have never seen so many aircraft in the air at once in the space visible to the eye.

Japanese aircraft, reinforced by Kawasaki Ki-10 biplanes (our designation I-95) - all that the Kwantung Army could scrape together - tried to help their encircled troops, but their attacks did not bring success. The final point was set on August 31, when the defeat of the Japanese grouping was completed, although air battles continued until mid-September. During the Soviet offensive, the enemy lost at least 43 aircraft.

For the Japanese, such an expense of military vehicles was an unaffordable luxury, especially when you consider that the Nakajima plant assembled one fighter per day, and the entire army aviation consisted of about 1000 aircraft. However, the main weakness of the Japanese Air Force was the catastrophic shortage of pilots, for the training of which there were only four aviation schools (in the Red Army in 1937 there were 18 aviation schools, in 1939 - 32, by May 1, 1941 there were already 100 of them). In the report already cited, Captain Kootani, as the greatest achievement of the USSR, spoke about the creation of a base for the mass training of flight personnel, about the huge work to popularize aviation carried out by Osoaviakhim, about dozens of civilian flying clubs with training airfields and aircraft. And, as for the biggest problem - about the conservatism of the Japanese, their skepticism towards aviation technology: "In Japan today they look at

airplanes like this - if you fly, you will fall, and it is considered strange if serious people fly. Forgive me, but there are probably people among those present here who are unlikely to fly even on a passenger plane. It's embarrassing for me to say this in front of older people, but if there are people among today's youth who are afraid of airplanes and are cowardly before flying, then you need to influence them ...

It is desirable to contribute to the elimination of the fear of aviation among the people or to create such a mood that even if there is some danger, then in the interests of national defense, the youth should direct their forces towards aviation. This is mostly prevented by fathers and mothers. I want to say whether the elders are not the last obstacle to the development of aviation in Japan. It is necessary to resolutely raise a campaign to popularize aviation, and if the USSR has 150,000 pilots, then Japan should have at least 50,000.

(Not even two weeks had passed after reading the report, when the head of the Central Aeroclub of the USSR named after Kosarev, commander M.S. Deich was arrested and "received a well-deserved retribution from the punishing hand of Soviet justice", and

secretary of the Komsomol Central Committee AB Kosarev, who was exposed as a politically bankrupt "double-dealer and thoroughly rotten person." The head of Osoaviakhim, commander R.P. Eideman back in June 1937, in Voroshilov's words, was "wiped off the face of the earth, and his memory was cursed"). On August 28,

1939, a cabinet change took place in Tokyo, and the new government approached Moscow with a proposal for a truce. Both sides were not interested in escalating the conflict, especially after the non-aggression pact between the USSR and Germany was signed on August 23. This meant that only a few days remained before the start of the Nazi invasion of Poland, and such a development of events, according to Stalin, inevitably led to the Second World War. Militaristic games in the Mongolian sands - "small episodes" - had to be curtailed. On September 12, more than 20 experienced Soviet pilots, led by Smushkevich, flew to Moscow. In the capital, they had a conversation with Stalin, a gala dinner in the Faceted Chamber of the Kremlin and an order to immediately go to the western districts, where the "Great Training Camps" were held - the Soviet troops were finishing the last preparations for the Liberation Campaign.

Belarus is dear,
Ukraine is golden,
Your bright borders We
will protect with bayonets, with bayonets!

Officially, hostilities in the region of the Khalkhin Gol River ended on September 15. From the Soviet-Mongolian side, over 900 aircraft took part in them, from the Japanese - more than 400. At the same time, according to the estimates of "our specialists", based on the unfounded reports of the flight crew, the enemy managed to lose either 646 or 660 aircraft. Soviet losses amounted to 207 aircraft and 159 people killed and missing. However, "their specialists" turned out to be even cooler and brought out completely astronomical numbers - either 1260, or 1370 Soviet aircraft destroyed by the valiant imperial aces and anti-aircraft gunners in the period from May 22 to September 15. As they say, the truth is out there somewhere. The real losses of the Soviet Air

Force amounted to 250 vehicles (including 52 SBs), of which 42 (16%) were non-combat losses. The Japanese Air Force lost approximately 170 aircraft and 180 men.

On the one hand, at Khalkhin Gol, Soviet pilots gained valuable combat experience, and commanders gained practical skills in operational leadership and organization of combat work, which remained unclaimed. On the other hand, a number of serious shortcomings were revealed in the training of personnel and the organization of the work of the rear in a combat situation, which the winners preferred not to notice. On

September 1, 1939, Hitler attacked Poland. In response, France and England, in the interpretation of the Fuhrer, "intervened in matters that did not concern them," and declared war on Germany, followed by all the British dominions. The fire in Europe flared up. Hitler miscalculated. Stalin's Marxist analysis did not disappoint. On the

other hand, the "blitzkrieg" was a brilliant success, and the Western allies were in no hurry to die for the Poles and "democratic values." German motorized and tank formations, having knocked down parts of the cover, started fighting with the main forces of the Polish army. German aviation, which had a qualitative and fivefold numerical superiority, quickly gained air supremacy. Its massive raids on administrative centers, railway stations, main transport routes and communication centers made it difficult to complete the mobilization and disrupted military transportation. The defense along the border began to crack and fall apart already on the third day of the war. By mid-September, the Polish army, which adhered to the cordon strategy and tried to hold every inch of Polish land in all directions, was demonstratively defeated by the Wehrmacht.

Stalin also did not sit idly by. In seven districts, a covert

mobilization, on the basis of units and formations of the Kyiv and Belorussian military districts, the Ukrainian and Belorussian fronts were formed. Ground troops were united into army groups, later transformed into armies. These groups received their air forces, mainly in the form of military aviation. In intervention - this is how V.M. Molotov in a conversation with the German ambassador Schulenburg - 3298 aircraft were supposed to participate.

The Red Army moved west at dawn on September 17, with the task of "with a lightning, crushing blow to defeat the pan-bourgeois Polish troops and liberate the workers, peasants and working people of Western Ukraine and Western Belarus." However, there was no need to fight. The "privatization" of the eastern regions of Poland took place without serious excesses, since the Poles practically did not offer resistance to the Soviets. Soviet aviation was engaged only in conducting reconnaissance and scattering leaflets, the remnants of Polish aviation - mainly training vehicles - flew to Romania.

The Wehrmacht and the Red Army met on the rivers Bug and San, exactly carrying out the plans developed by both sides "in the spirit of good and friendly interaction."

The Bolshevik-Nazi brotherhood, sealed with Polish blood, was officially confirmed on September 28 in the Kremlin by the signatures of Molotov and Ribbentrop under the Treaty of Friendship and the Border between the USSR and Germany. Witnesses say that Stalin these days was as happy as ever, the prospects that opened up were breathtaking. The talks were held in the warmest and most relaxed atmosphere. Hitler, through Ribbentrop, confirmed his readiness to comply with all the conditions of the secret additional protocols, agreed to exchange Lithuania for a piece of Polish territory between the Vistula and the Bug, wished him success "in revising the situation in the Baltic states" and offered to participate "in big things" - "to consider the possibility of cooperation in relation to England", who rudely rejected the Fuhrer's proposals for peace. Stalin assured the Fuhrer in response that: "If Germany gets into a difficult situation, then she can be sure that the Soviet people will come to Germany's aid and will not allow Germany to be strangled. The Soviet Union is interested in a strong Germany and will not allow Germany to be thrown to the ground."

At the banquet, during which many toasts were uttered to the shouts of "Hurrah" for the leader of the Soviet people and the Fuhrer of the German nation, for Molotov and Ribbentrop, for good neighborliness between the new settlers in the former Polish "apartment", for the bright future of "two states of real socialism", and there was a lot to drink, Stalin, pleased as ever, declared: "The Soviet government is not going to enter into any relations with such snickering states as England, America and France. Chamberlain is an idiot, and Daladier is an even bigger idiot."

The "revision" of the Baltic states did not take much of the Kremlin's time. In October - November 1939, Soviet garrisons, naval and air units (9 air regiments) were voluntarily-compulsorily placed on their territory. But the government of Finland

turned out to have "a lot of guts." Unlike the previous "spheres" of Stalin's interests, Finland did not want to "reorganize" either territorially or politically. She brazenly rejected the treaty on foreign military bases imposed on her and refused the "fair demands" of the Soviet leadership, such as "withdraw her troops away from Leningrad" or exchange the Karelian Isthmus and the Rybachy Peninsula for the Karelian tundra. On November 30, 1939, having broken the non-aggression pact, the USSR, without declaring war, attacked the "beautiful Suomi" with a treacherous rapist.

Tanks are breaking wide
clearings, Planes are circling
in the clouds, The low sun of
autumn Lights fires on bayonets.

The Soviet interpretation of events, of course, was completely different: in response to the "outrageous provocations and hostile policy of the ruling circles of Finland," parts of the Leningrad Military District were forced to cross the border and "start to repulse anti-Soviet actions."

At 8.30, the troops of the Leningrad Front, commanded by the commander of the 2nd rank M.A. Meretskov, after a half-hour artillery preparation, four strike groups crossed the state border. During the action of retribution for "provocations", it was planned to defeat the "White Finns" on the Karelian Isthmus and north of Lake Ladoga in 8-10 days and create conditions for an attack on Helsinki and the occupation of the entire country. The capabilities of the warring parties were incommensurable, and therefore Moscow intended to demonstrate to the world a spectacular "blitzkrieg", no worse than the German one.

As part of the Finnish aviation, there were 145 combat vehicles. Including 118 serviceable ones. Organizationally, they were divided into three regiments (Lentorykymment - LeR), the regiments, in turn, into groups (Lentolaivue - LLv). In addition, two separate air groups were available for operations in the maritime theater. Since Finland declared itself a neutral country and adopted a purely defensive doctrine, the basis of its air force was interceptor fighters. The most recent were 36 licensed Fokker D-XXI, which was a mixed-design monoplane with fixed landing gear, armed with four machine guns and reaching speeds of up to 410 km / h. In addition to these aircraft, there were 10 Bristol Bulldog IVA biplanes bought in England with two synchronous Vickers and a front speed of 330 km / h and 9 archaic Gloucester Gamecock Mk.II devices of the 1926 model of the year - two machine guns and 250 km / h. All fighters were brought together in LeR-2, which was entrusted with the task of protecting the Finnish sky.

The Fokker CX and Fokker SU-E biplanes - there were 36 of them in the LeR-1 - were used as light bombers, attack aircraft and reconnaissance aircraft. The LeR-4 bomber regiment was armed with 14 Bristol Blenheim Mk.1 twin-engine aircraft - British analogues of the SB. Naval aviation consisted of eight floatplanes. The Finns

tried to compensate for the lack of combat vehicles with the good individual training of pilots, combined with modern tactics. The commander of the fighter regiment (LeR-2), Lieutenant Colonel Richard Lorenz, went on internships in units of different countries, in particular, the German squadron "Richthofen" and introduced many useful improvements in Finnish aviation. Just like the Germans, the Finnish fighters abandoned the three-aircraft flight as the main tactical unit in favor of two interacting pairs. According to Finnish instructions, fire on a bomber was prescribed to be opened from a distance of 150 meters, but pilots were taught to shoot from a distance of no more than 50 meters, minimizing the chance of a miss. Finnish generals could not even think of fighting for air supremacy; pilots were ordered to avoid open combat with red star fighters and, like ground troops, to use "guerrilla tactics". Soviet generals, having 2446 aircraft, including 469 combat vehicles in the Baltic Fleet, "did not deny themselves anything." On November 30, the KBF Air Force made the first raids on the cities of Finland. At 9 am, three bombers appeared

over Helsinki and dropped their bombs on the Malmi airfield and the suburb of Tikurilla. An hour later, Captain Rakov's squadron attacked

the Finnish base of Santahamina. Finally, eight DB-3s from the 3rd Squadron of the 1st Mine-Torpedo Aviation Regiment under the command of Captain A.M. Tokareva, instead of the port of Helsinki, dropped bombs on a densely populated part of the capital, almost hitting the parliament building. In Helsinki, 91 people were killed and another 236 people were injured. Four bombers were killed: two fell into the water, two crashed on takeoff and landing.

Marshal Mannerheim recalls: "November 30 was a clear and sunny day. Most of the residents who left the capital in autumn returned from their places of temporary residence. During these morning hours, the streets were full of children and adults going to school and work. Suddenly, bombs rained down on the city center, sowing death and destruction. Under the cover of thick clouds, Russian planes were able to overcome the distance from Estonia to Helsinki and drop their cargo. The target was probably the port of Sandvik and the main railway station. At the same time, the airfield of Malm, the working areas in the north of the city, were subjected to bombardment and machine-gun fire. Where the bombs fell, smoke swirled and fires started. Early in the morning a message reached me that after artillery preparation, the Russians had

crossed the border on the Karelian Isthmus in all main directions. Soon after that, reports came in: enemy aircraft were making destructive raids on villages and settlements. The next squadron Tokarev repeated the raid on Helsinki, but this time missed. In addition, Kotka, Hanko, Vyborg, and Koivisto were bombed. At the request

of the Secretary General of the League of Nations, J. Avenol, regarding what had happened, Foreign Minister Molotov stated that there had been no bombing of the city, and planes were dropping baskets of bread for the starving Finnish proletariat. In response to the protest of President Roosevelt, a mocking Molotov demarche followed, published in the Izvestiya newspaper: "Soviet aviation has not bombed and is not going to bomb the city, and our government respects the interests of the Finnish people no less than any other government. Of course, from America, located more than 8 thousand kilometers from Finland, this is imperceptible.

Special cynicism also lay in the fact that Soviet aircraft flew to bombard Finland from airfields located on the territory of "neutral and sovereign" Estonia. At the same time, "Stalin's falcons" repeatedly dropped cargo on Estonian soil. For the sake of truth, no one set the task of destroying cities specifically. Somehow it turned out by itself: the navigators were poorly oriented on the map, bombs were dropped from a height of 8000 meters, again the weather.

The conclusions on the actions of the aviation of the Baltic Fleet were made as follows:

"The experience of fighting with the White Finns, along with positive results, also revealed significant shortcomings. The most important of these was the poor quality training of a significant part of the flight crew for flights in the clouds and at night, at low altitudes, with a full bomb load. The simplification in pre-war combat training, the neglect of calculations for hitting targets, which caused low accuracy of bombing, especially against ships and other small targets, had an effect. Navigator training was also low, and poor knowledge of the theater of operations appeared. As a result, orientation was lost in twenty cases, eight flights ended in an accident and disaster. The flight personnel did not have sufficient skills in conducting group air battles, experience in dive bombing and the use of airborne weapons at night. At the beginning of the war, the role of aerial reconnaissance was underestimated, the weak point was the accuracy of decryption

pictures."

If you subtract everything that the "red eagles" really did not know how, what remains? Let's say right away that the Baltic Fleet lost 63 combat vehicles in total, but only 17 of them died from enemy impact. "Strategic"

bombardments of settlements and ports, in which the 6th, 21st and 53rd long-range bomber regiments from AON-1–155 DB-3 vehicles also took part, continued until mid-January, 956 residents became their victims, 1840 people were injured. At the same time, leaflets were distributed that the civilian population was being killed not just like that, but according to the will of the Finnish people, "outraged by the criminal policy of the mediocre government of Cajander-Erkko-Tanner", and in the vital interests of the people. However, neither the demoralization of the population nor the uprising of the proletarians was achieved. The destruction of industrial facilities and infrastructure did not initially

it was planned, because it was believed that after the capture of Helsinki "all this will be ours."

It turned out the opposite: all sections of Finnish society consolidated under the slogan of fighting "Bolshevik fascism", and on December 14 the League of Nations expelled the USSR from its members.

The Soviet command, confident in absolute superiority over the enemy, for quite a long time did not take into account the "microscopic" Finnish Air Force, moreover, armed, for the most part, with obsolete aircraft (on the Karelian Isthmus 36 "Fokkers" against 320 "gulls" and "donkeys"). The bombers flew without fighter cover, and already on December 1, the "twenty-first" opened the scoring. First, Lieutenant Vuorilo shot down the first SB over Vyborg, then his comrades "landed" nine more bombers from the 41st and 24th SBAPs. The Finns lost one interceptor, shot down by their own anti-aircraft gunners and the only Bulldog in the entire war, which was destroyed by the F.I. Shinkarenko from the 7th Fighter Regiment of the 59th Air Brigade. A trio of Blenheims attacked a convoy of Soviet tanks and trucks in the Tsalka area that day, one bomber did not return to the base.

Already on December 3, Marshal Voroshilov sensed with his "spinal cord" that the operation was not developing as planned (later he admits: "We did not imagine all the difficulties associated with this war"). In the evening, Meretskov

received order No. 0269 with "valuable instructions":

"1. The main drawback of our units, especially in those areas where the enemy has a network of obstacles and ambushes built ... is that the artillery breaks away from the infantry, the infantry runs ahead and, having run into serious obstacles, is forced to wait for the artillery to approach. ... The main drawback of the actions of our aviation is that it sets itself a large number of targets at once, is scattered over a variety of objects and is reluctant to take on specific tasks aimed at serving the infantry directly ... "

On December 9, the Headquarters of the High Command under the "chairmanship" of Voroshilov assumed direct control of military operations; Stalin, who did not hold any public office, was listed as one of the members. Meretskov was put in command of the 7th Army, advancing on the main direction - the Karelian Isthmus. Despite daily prodding, the Soviet troops, struggling with the Finnish sabotage detachments, the Karelian nature and the wonderful features of their own organization, advanced extremely slowly in all directions. Aviation, according to the Headquarters, worked "not smart enough" and was unable to paralyze the enemy's railway transportation. Bad weather with a snowstorm did not allow aviation to operate until December 19, but

on this day, the bombing of Finnish cities resumed.

"Everyone rejoiced at the improvement of the weather," recalled the pilot of the bomber, Captain K. Golubenko, "everyone wanted to celebrate the sixtieth birthday of the great Stalin with a sortie. The wall paper and combat leaflet came out, as always, lovingly designed by Popov. They contained many notes by pilots, radio operators, navigators, technicians and aircraft mechanics with the most cordial wishes to dear comrade Stalin on his sixtieth birthday. In every line one could feel the boundless devotion of our people to the Motherland, to the cause of Lenin and Stalin. On this day, the cars were ready to take off before dawn. It was 25 degrees below zero. Clear skies made everyone happy.

LLv-24 pilots conducted 22 air battles over the Karelian Isthmus that day. Soviet losses amounted to seven SB bombers, one DB-3 and two I-16s. Four days later, the Finns shot down six SBs and four donkeys from the 7th and 68th Fighter Aviation Regiments. On December 21, the 53rd DBAP lost four DB-3s at once. On February 25, the Fokkers intercepted six DB-3s from the 6th DBAP - three bombers

were shot down, two made an emergency landing. Another DB-3 lost until that time the 21st DBAP, which had been inactive until that time, and inactive in every sense of the word: only over the target, when the Ilyushins were attacked by enemy fighters, it turned out that the machine guns were covered with thick factory grease and were unable to shoot.

In this regard, the Stavka directive of December 26 indicated:

"In aviation operations, attention is drawn to: 1.

Fighters do not escort bombers, meanwhile, the presence of ice on the lakes now makes it possible to bring fighters closer to the front line and escort bombers. 2. Bombers on the days of decisive offensives

do not deliver a massive blow on a short front under the cover of our fighters, but fly 3–6–9 bombers without fighters.

3. Bombers are over the target for a long time, making several visits without using anti-aircraft maneuver during enemy anti-aircraft fire.

4. During the month, the exit and entrance gates do not change, and enemy fighters easily intercept our planes.

Well, who needed the experience of Spain and Khalkhin Gol? For whom were kilometers of reports written? When I.I. Proskurov (a pilot, a participant in the war in Spain, in the summer of 1937 he was a senior lieutenant, from April 1939 - deputy people's commissar of defense, head of the Intelligence Directorate of the Red Army) was asked why the troops lack information about the organization, weapons and tactics of foreign armies, commander explained that our intelligence had collected a whole basement of "valuable materials" and, in order to dismantle it, "a whole team of 15 people should work for a couple of years." One gets the impression that in previous years, reports and reports were immediately sent to the basement, not

reading.

Everything is as usual: how many of those Finns, we will throw boots! Just on this day, three DB-3s of the 21st TBAP were blown by some wind to Gruzino station, on which they famously and without loss bombed. Thank God, not one of the 30 bombs hit the target (Voroshilov's reservation about the Air Force of the 14th Army dug in in the Petsamo area is interesting: "This army gave the Stavka the least concern, except for its aircraft flying into Sweden and Norway." That's interesting, Didn't they bomb anything along the way?

On December 27, Finnish fighters shot down three SBs from the 18th SBAP.

By the end of the month, the combat score of Lentolavio-24 reached 54 victories in the air, including 46 SB and DB-3 were destroyed. Irrecoverable losses of the 2nd Air Regiment - two Fokkers, one Bulldog. At the same time, the biplanes of the 1st Regiment, as best they could, supported the counterattacks of their ground troops, storming the positions of Soviet artillery; at the same time, six Fokker CX were out of order for various reasons. Bombers of the 4th Regiment attacked columns and concentrations of troops, port facilities and ships of the Baltic Fleet, carried out long-range reconnaissance and lost three vehicles and one crew. Naval squadrons carried out patrol flights over the Gulf of Finland and the Gulf of Bothnia, as well as the Sea of Aland, trying to interfere with the actions of Soviet submarines; own losses amounted to four aircraft, and one of them was shot down by anti-aircraft fire from the Soviet submarine S-1. Soviet pilots and anti-aircraft gunners shot down 13 enemy aircraft in

December. On the land front, the most advancing of all, the "brave and invincible

Red Army" choked with blood and switched to positional defense not provided for by the charters. High losses of Soviet bombers, low activity of fighters, a large number of accidents and disasters during

this period were caused, first of all, by the primitive training of pilots and the absence of airfields in the theater. Why mess around if they were going to deal with the "Finnish booger" in 15 days; as a result, fighters

elementary range was not enough. At the same time, in Finland, "military airfields built by the beginning of 1939 with the help of German specialists were able to receive 10 times more aircraft than the Finnish Air Force had," which, by the way, is still presented as an obvious sign of the aggressive aspirations of the "Finnish militarists". Not to mention the notorious "Mannerheim Line", which was assigned the role of "a stronghold for the subsequent development of offensive military operations" and an invasion of the territory of the USSR. Even in the 21st century, employees of the Russian General Staff are trying to shove this Chukhonian horror into our heads. At a meeting of the command staff dedicated to the

Winter War, commander P.V. Rychagov, who commanded the aviation of the 9th Army, reported: "We had a maximum of 25–30 aircraft in

the Ukhta direction. Reasons for this. Firstly, in this direction there was only one airfield 150 meters wide and 800 meters long. We landed at this airfield up to 40 aircraft of various purposes, together with aircraft of the Civil Air Fleet. Everyone could not fly from there at once. If they all took off at once, it would take a colossal amount of time to land. Moreover, one more fact that slowed down this work, except for this airfield at a distance of 200 km, it was impossible to land a single aircraft anywhere. This means that if an aircraft with a shot through chassis arrives on this runway, it will be forced to land, as we say in aviation, on the "belly". If he sits on this belly, the rest of the ships that are in the air will not find a place for themselves to land and they will be defeated outside the airfield ...

Around the forests and mountains, terribly bad terrain. Moreover, the preparation of this theater of operations to the Arctic Circle from Petrozavodsk, approximately 400 kilometers, was not sufficiently carried out, there was not a single airfield there. There was one airfield, Poduzhemye, and that one was

unsuitable ... Under such conditions, in a peaceful environment, we did not fly, in order to preserve our own skin and, in general, to avoid accidents and accidents. Well, here, when we had a war, then we were required to fly at any time, fly in any weather, in any wind and from very bad airfields, i.e. 800 m for the SB with a load of 800-900 kg. It is impossible to offer to fly from such an airfield in peacetime, not a single commander agree...

We also had such cases when, during a flight either to Uleaborg, or to one of the big points, 30-50 aircraft flew, and 10 aircraft returned to the airfield. The rest landed on all the lakes, since it was not possible to reach the airfield, chose the first place that came across, sat down and demanded help. Such cases were frequent, especially in December - January ... The rear, consisting of "weak" bases that were hastily put

together, was clearly not provided with army transport. The army was organized on the move, there was no transport, communications, command staff. All these difficulties gave us frequent interruptions in the supply of bombs and fuel. The cartridges, however, were enough, enough.

A new phase of the air war began immediately after the new year. On January 3, the air units of the four Soviet armies received an order over the next ten days with systematic and powerful bombing attacks on administrative and military-industrial points, ports and bridges, to disorganize the work of the enemy's rear. Vice Admiral V.F. Tributs clarified the tasks of naval aviation: "The ports are absolutely destroyed to the ground, because they are the most important centers that feed the enemy army. Destroy Abo, go to Raumo, etc."

On the morning of January 6, 17 DB-3 bombers from the 6th DBAP took off in two waves from an airfield located in Estonia. The target of the raid was the city of Kuopio. The first group of nine Ilyushins reached the target as planned, but the second wave of eight bombers under the command of Major Maistrenko, while crossing the Gulf of Finland, was intercepted by Lieutenant Sovelius' Fokker D.XXI, which shot down one of the bombers. Having dumped the load on the target, now the "seven", turned to the reverse

course, which was a straight line between points "A" and "B". At noon, Lieutenant Sarvanto's fighter attacked them and shot down six Soviet bombers in four minutes: "Some caught fire after bursts of my machine guns like pages from a book on fire. The red January sun illuminated the smoking planes. The last DB-3, which the Finnish guy did not have enough ammunition to finish off, managed to reach the airfield, but

was not recoverable.

While units of the 7th and 13th armies on the Karelian Isthmus were preparing for a decisive offensive, the Finnish ski detachments, taking advantage of the lull in the main direction, cut off communications, blocked, crushed and alternately ground the divisions of the 9th army of V.I. Chuikov and the 8th Army G.M. Stern - 163-10, 44-10, 54-10, 168-10, 18-10 ... On January 7, the Soviet troops operating on the Karelian Isthmus were united into the North-Western Front, where

26 rifle divisions were concentrated. In the second decade of January, there was a lull: the front commander, commander of the 1st rank, S.K. Timoshenko thoughtfully prepared to break through the "Mannerheim Line", accumulating strength, establishing logistic support, and establishing elementary military order. On the frozen lakes, landing sites for fighters were equipped.

The fights in the air continued. On the afternoon of January 17, ten Fokkers intercepted three groups of SB bombers (25 aircraft in total) from the 54th SBAP. Soviet planes were returning home after completing the mission. The battle broke out over the Karelian Isthmus, as a result, nine SBs were shot down, several more vehicles were damaged. The enemy had no losses. Two days later, as a result of fighter attacks, two more SB crews were killed. Seconded to the headquarters of the North-Western Front, commander P.S. Shelukhin wrote to the People's

Commissar of Defense: "The state of combat training of air units is at an extremely low level ... bombers do not know how to

fly and especially maneuver in formation. In this regard, it is not possible to create fire interaction and repel an attack by enemy fighters with massive fire. This makes it possible for the enemy to inflict sensitive blows with his insignificant forces.

Navigational training is very poor, resulting in a lot of wandering even in fine weather; in poor visibility and at night - mass wanderings. The pilot, being unprepared for the route, and due to the fact that the responsibility for aircraft navigation lies with the pilot-observer, carelessly in flight and loses orientation, hoping for a pilot. Massive forefronts have a very detrimental effect on the combat effectiveness of units, because they lead to a large number of losses without any enemy influence and undermine the crews' confidence in their own strength, and this, in turn, forces commanders to wait for weeks for good weather, which sharply decreases

number of departures...

Speaking about the actions of aviation as a whole, it is necessary to speak most of all about its inaction or action, for the most part, in vain. For there is no other way to explain the fact that our aviation, with such a colossal superiority, could do almost nothing to the enemy for a month. The helplessness of the Air Force of the 8th Army, commanded by I.I. Kopets, emphasized in

Stavka directive of 18 January:

"The headquarters is completely incomprehensible to the inaction of our bomber and attack aircraft in assisting the 56th corps. Despite the weak Finnish aviation, the entire aviation of the army is only engaged in dropping products and covering the dropping aircraft, leaving parts of the 56th corps without assistance and allowing the enemy reserves to approach unhindered ... "

Three more days later:

"For the entire time of the battles of the 18th and 168th divisions with the enemy, who went to the flank and rear of these divisions, the Stavka did not see any concentrated combat operations of the 8th army aviation to assist the troops of the 56th division of the corps ...

Recently, objects of bombardment behind enemy lines, given as targets for aviation of the 8th Army, have not been exposed at all, and unhindered delivery of reinforcements and food by the enemy was allowed.

The Headquarters believes that the 8th Army aviation is used shamefully, worse than in other armies, is poorly led and does not give in the work what it is obliged to give. with its overwhelming superiority over enemy air forces.

But the neighbor on the right had nothing to boast of, there, too, in general, "nothing was exposed" behind enemy lines. The Air Force of the 9th Army initially had 39 aircraft, including 15 fighters. During the fighting, the Army Air Forces were transferred: the 10th high-speed bomber air brigade (16th, 41st and 80th SBAP), the 3rd transport aviation regiment.

Spirin's special air group, the 145th and 152nd fighter regiments and the 33rd separate reconnaissance squadron. Rychagov shared his experience at the

meeting: "In our army, the use of aviation, approximately until the retreat of the 44th division, if you can call it that, proceeded more or less normally. We were engaged in both the immediate and deep rear of the enemy and were engaged in work along the front. After the 44th division withdrew, the 54th division went, which

was surrounded. It was not difficult to surround it: they cut off the road in one place; she could not go off-road and remained surrounded. Plus, it was then divided into several more garrisons, and thus turned into a kind of layer cake. Each garrison panicked in its own way. From that moment on, the work of aviation switched to helping the garrisons of the advanced 337th regiment, the command post of the 54th division and the divisional exchange office. The main focus of the army was directed there. The 80th regiment and two attached squadrons worked there. They were engaged in bombardment around this division, that is, they did not give the enemy the opportunity to shoot at the division, protecting it from all adversity ... Gusevsky was the commander. Every day, and sometimes several times a day, he sent panicky telegrams, even to the point that he wrote: "We see each other for the last time," "Goodbye," and all sorts of other panic information. This is absolutely unworthy behavior for the commander of a Red Army rifle division. Under the influence of these telegrams, almost all the reserves of the 9th Army, which were there and suitable, were ruined, many people were thrown there, and they could not organize any offensive to liberate them. The division was fed by the 80th aviation regiment for 45 days, and this regiment actually saved it, an inactive division, from starvation and death, giving the Finns no peace day and night. Every day, at the slightest activity of the Finns, panic arose there, all the gradually arriving squadrons and battalions of skiers

were sent there ... This is what led to this panic behavior of Gusevsky, who was surrounded by a division. Thanks to the imprisonment in the environment where he was sitting, the aviation there was obliged to bomb, shoot, and guard him for 45 days. Gusevsky realized that he lived thanks to aviation, and said: two guns are firing, send out bombers. Applications for aviation were sent from there almost daily with such requests that it was simply inconvenient that the brigade commander of the Red Army was

writing this ... Gusevsky asked to bomb even individual guns. The enemy, after firing from them, carried them from place to place, he had few of them, took care of them like a child, dragged them to another place and opened fire again from this place, try the bombers to keep up with them. The enemy's gun is firing, which means that they believe that aviation is working poorly. Where the enemy was, they did not know.

A sector of acres of 20-30 is allocated, they say, let's thresh, they thresh an empty forest, there are cones from this forest, all the trees will be cut down. From such bombing no

there is no benefit. Those objects that should be bombarded by aircraft, they remained in a calm state. When the panic stopped, we managed to bomb other targets...

cannons to shoot at locomotives, there were several successful hits ...

Bombardment of stages does nothing, it's too hard to hit. They tried to bombard the stations, but after that the stations quickly recovered and began to work, so important stations should be kept under attack all the time.

Flights along separate houses, valleys, paths of the enemy gave almost no results, they found small groups, they could not influence the enemy with such a flight. It was difficult to catch the enemy in the forest. Our ground situation shows that the fact that our troops are not masked at all could serve as the orientation of the flight crew. Denisov told me that there was a case on the isthmus, when one of the division commanders told him that with such powerful aviation as we have, we will not disguise ourselves, because we do not need it, we will be protected anyway; or such a case when one division abandoned its anti-aircraft artillery near Leningrad and crawled out to the front as if on a holiday; or another example, when one enemy aircraft appears above our location, then panic rises, especially in the rear. They think that not a single plane can fly to us. But try to notice a single plane at an altitude of 5-6 thousand meters ... Our infantry is now accustomed to such a situation that enemy aircraft should not bomb it. They would have fought with the enemy, who has a lot of aviation and then anti-aircraft artillery, which is busy like upholstered furniture, they would hardly have left, but would have brought it faster than winter

uniforms. Few of us were hit from the air, that's why we don't know the price

aviation."

It can be concluded that in the 9th Army, aviation was mainly engaged in "feeding" ground troops (only for the 54th Infantry Division, the 10th High-Speed Bomber (!) Air Brigade dropped 98 tons of food and 40 tons of ammunition), bombarding houses and paths and occasionally shooting at locomotives. The Finnish pilots were so insolent that they provoked an angry order from Timoshenko,

signed by him on January 24:

"Recently there have been unbearable cases when single enemy planes manage to fly over our troops and even bombard their positions and airfields.

The military units and aviation of the front, saturated with machine-gun and artillery anti-aircraft weapons and fighter aircraft, still cannot shoot down enemy planes trying to fly over the front line and once and for all discourage any desire for their appearance over our troops.

Semyon Konstantinovich slightly exaggerated, after all: 10 enemy aircraft were in January shot down: four "Blenheim", four "Fokker" CX and two of some Swedes.

The period of stabilization of the front line ended on February 1 with the beginning of attacks by the troops of the North-Western Front on the Karelian Isthmus, designed to "probe" the enemy's defenses. The Soviet command concentrated large masses of troops on a narrow sector. The number of Soviet aviation was increased to 3253 aircraft - almost as much Hitler spared for Barbarossa. The bombers switched from attacking strategic targets to providing tactical support to their ground forces. According to the commander of the 2nd rank V.D. Grendal, this was done on the personal instructions of the Brilliant Strategist, who tirelessly taught his commanders military affairs: "For a long time aviation did not receive the right direction, and only after Comrade. Stalin said that it was enough for aviation to be engaged in the rear, the work of aviation was restructured. Tov. Stalin said - let aviation work with military units. Aviation was reorganized, and in

in accordance with this, the bulk of aviation was transferred to the command of the army. Large groups of fighters were allocated to escort and patrol over the attacking troops. In the war with Finland,

they could not do without TB-3. As on Khalkhin Gol, they worked mainly at night, hitting large volumes behind enemy lines, and before breaking through the Mannerheim Line, they switched to bombing its fortifications: no other Soviet aircraft could lift a 2000-kg bomb. But for the most part, the FAB-250 and FAB-500 were used. The number of combat-ready fighters in the Finnish Air Force, despite the losses, increased and was at the level of 45–67 aircraft. Shortly after the start of the war, the British government decided to transfer to the Finns 30 Gloucester Gladiator Mk. P "(four machine guns, 410 km / h); the first of them arrived on January 18, 1940 and, like the next, became part of the LLv-26, replacing the outdated "bulldogs", which were transferred to "coaching work" and no longer participated in the battles. In early February, 30 Moran-Saulnier MS.406C cannon fighters began to arrive from France via Sweden, with which the newly formed LLv-28 air group was armed. In the middle of the month, the Italian Fiat G.50 Freschia appeared, replenishing the ranks of the LLv-26 (already on January 29, they shot down two DB-3s from the 53rd DBAP). In addition, the British supplied 24 Bristol Blenheim Mk.IV bombers. Eleven combat vehicles of various types were transferred in bulk by Sweden, and in Lapland, in the Kemi region, 16 Aviaflotilla aircraft of Swedish volunteers fought (at the end of the campaign, the Swedes announced twelve victories, they themselves lost six vehicles, in battle - two). On February 2, the "gladiators" opened a combat score, shooting down one "gull" and two I-16s, on February 3, the 42nd DBAP lost four DB-3s in a fight with the Fokkers, and the 1st MTAP, engaged in mine laying without covers, two.

On February 13, six "gladiators" intercepted nine bombers from the 39th SBAP north of Ladoga, flying accompanied by "gulls". In a short battle, the Finns shot down seven SBs. Soviet fighters in the first decade "filled up" three Fokker-XXI.

The general offensive of the troops of the North-Western Front began on February 11 with a three-hour artillery and aviation preparation. Long-range aviation again attacked targets behind enemy lines, with 65 to 120 bombers participating in some raids. On the first day, the attackers managed to penetrate 1.5 km into the Finnish defense, and by the evening of February 14, a gap of 4 km along the front and 8-10 km in depth was made. With no reserves to plug the breach, General Mannerheim gave the order to retreat to the second defensive line. By February 25, the advance of the Red Army was suspended - the command took a two-day pause in order to regroup for an attack on Viipuri (Vyborg). On this day, three "gladiators" from LLv-26 attacked nine R-5s, which escorted six I-153s from the 13th separate fighter aviation squadron. The Finns shot down four planes, in turn, two Gladiators were shot down, and the third, due to the damage received, had to make an emergency landing.

On February 26, Fiat troikas intercepted a group of Soviet aircraft south of Kuovalaa and shot down one I-16 and one DB-3; the next day, Soviet fighters burned one Fiat. The Finnish side

suffered heavy losses on February 29, when Soviet fighter aircraft launched a surprise attack on the airfields where LLv-24 and LLv-26 were based. Pilots from the 49th and 68th fighter regiments on takeoff and in the air destroyed six "gladiators" and one "twenty-first", losing two "donkeys". During this battle, the only air ram in the entire war was made. Squadron commander senior lieutenant Ya.F. Mikhin in a frontal attack with the wing of his plane hit the keel of the Fokker Lieutenant Tatu Gunganen, cutting it down. The Finnish pilot died, and the Soviet one returned to base. Only on March 3, Meretskov's army reached Vyborg, but all attempts by the Soviet

troops to take the city were unsuccessful. Then, on March 4, seven rifle divisions made an "ice campaign" through the Vyborg Bay, bypassing the enemy's fortified positions and in two places clung to the coast. In order to prevent the advance of the "Red Russians" deep into the territory of Finland, all the "White Finnish" aviation was thrown into battle, which attacked the columns of troops and equipment moving along the ice of the bay to the bridgeheads. Stubborn resistance on land, along with air support, allowed the Finns to stop the Soviet advance. In air battles over the bay, both sides lost five aircraft each. In the meantime, it became known in Moscow that Great Britain and France were preparing to land an expeditionary force in Norway, with the subsequent

help of Finland. The allies were only waiting for the official appeal of the Finns for help and the consent of the Swedes and Norwegians to let the troops through. At the same time, according to Soviet intelligence, they were developing a plan for aerial bombardment of the Baku oil fields from the territory of Iran and Syria. They also talked about the landing of the allies in Arkhangelsk. Thus, a clash between the Soviet Union and the Entente was brewing. From Stalin's point of view, in the face of such a threat, the Winter War had to be ended, and the "liberation" of Finland should be postponed until better times. The "People's Government" of the Kremlin parasite comrade Otto Kuusinen, "who fully approved and supported the actions of the Red Army", went to the dustbin of history, it became necessary to renew contacts with the legitimate government of the Republic of Finland. On the other hand, the Finns have long been trying to establish a dialogue with Moscow through third countries, and in early March, Mannerheim reported that the army was on the verge of defeat. On March 6, the Soviet leadership, through the Swedish embassy, announced its readiness to begin peace negotiations with Finland, which began in the Kremlin two

day.

The last victims of the Winter War in the air were the DB-3, shot down on February 11 by a Fiat, and the Fiat, damaged in an air battle on the same day and crashed during an emergency landing. According to Finnish data, the

Lentlavo-24 interceptors scored only 119 victories, losing 12 Fokkers. The 2nd Fighter Regiment made 3486 sorties and shot down 170 enemy planes. Regiment losses - 29 vehicles and 15 pilots. In total, the Finnish Air Force completed 5693 sorties and shot down 207 aircraft, another 314 aircraft shot down anti-aircraft guns; total - 521 aircraft. Own losses - 76 aircraft shot down and 51 seriously damaged. For a full account, you can add about 15 combat vehicles that crashed "on their own" due to bad weather conditions or engine shutdown. 304 pilots were killed, 90 were missing. Among them were Swedes, Italians, Danes, Hungarians. Thanks to supplies from the West, 166 combat vehicles

remained in the first line units, including 128 serviceable ones. Soviet aviation, according to official data, completed 10,0970 sorties. At the same time, the Red Army Air Force and the Red Banner Baltic Fleet destroyed 362 "White Finnish

aircraft". Own losses amounted to 261 cars shot down or made forced landings behind the front line, another 86 are missing and 227 are under the heading "died and damaged in accidents and catastrophes." In total - 574 vehicles, including about a hundred DB-3 bombers and two heavy bombers TB-3. There are other figures: "For the entire time of the Soviet-Finnish war, the USSR lost 627 aircraft of various types. Of these, 37.6% were shot down in combat or landed on enemy territory, 13.7% were missing, 28.87% were lost as a result of accidents and disasters, and 19.78% were damaged, which prevented the aircraft from returning to service. ". As for the personnel, the General Staff of Russia, to this day, is not in the know: "It was not possible to find complete information separately about the losses of Air Force units during the Soviet-Finnish war." Excluding the Baltic Fleet, the losses of the Air Force amounted to 785 people killed and missing, of which 68% were flight personnel.

It is very possible that the Finns overestimated their results, but they can claim at least 347 destroyed Soviet aircraft. The postscripts of the Soviet side are beyond doubt. According to the award sheet, signed by the head of the Air Force of the 7th Army, Divisional Commander Denisov, two squadrons of the 7th IAP from the 59th Fighter Brigade "shot down 69 vehicles, including 12 bombers"; on one day only, December 23, 10 Fokkers were "filled up". And Nikolai Toropchin, commander of the 25th IAP of the same brigade, did not blunder: "Almost every time we returned to the airfield with a victory ... On the Karelian Isthmus, we shot down 52 enemy aircraft, but we ourselves did not lose a single one in air battles." For example, on February 2, the regiment shot down one FOKKep-D.XXI with a Danish pilot over the Imatra station, but twelve were recorded! So after all, the 38th and 68th regiments also did not catch flies, but beat the enemies in batches at each meeting. For the skillful command of the brigade, Colonel E.K. Erlykin was awarded the title of Hero of the Soviet

Union: "In severe meteorological conditions, the aviators of brigade commander Yerlykin made 10,812 sorties that winter, shot down 101 in the air and destroyed 30 enemy aircraft on the ground, without losing a single one of their own."

Despite the fact that everyone who was supposed to know that they were irrevocably retired from the brigade 32 fighter, including 21 was shot down in battle - in fact, one regiment was destroyed.

The final losses of the "White Finns", apparently, were incited, based on the Reports of the Soviet reconnaissance, which counted about 500 aircraft.

Although the Finnish pilots proved to be worthy opponents, they could not and did not have a serious impact on the outcome of the Finnish Air Force hostilities. However, according to Mannerheim, Russian aircraft did not become a decisive factor either:

"Before the war, the skill of Russian pilots was highly valued. We were prepared for the overwhelming advantage of the Russians in the air and expected crushing attacks on troops, factories, cities, communications network. However, this did not happen. As is often the case, when a person prepares for the worst, his fears are exaggerated as a result. It turned out that Russian aviation did not have an aircraft that

could be called modern. In any case, the planes that took part in the Winter War were mostly of the same type that the Soviet Union used during the Spanish Civil War. In recent years, the aviation industry has not kept up with the development of progress in this area, since political purges have deprived scientific institutes and aircraft factories, as well as aviation itself, of the best personnel ...

The Russians were completely unable to carry out the strategic task of cutting off our communication with foreign countries and provoking chaos on our communications. Water transport was concentrated in Turku and was not damaged, despite the fact that the city was bombed sixteen times. Our only rail link to foreign countries, the Kemit-Tornio line, which served both for the import of military equipment and for most of our exports, remained unscathed until the end of the war.

Without a doubt, the result of the air war did not correspond to the costs spent on her efforts."

On March 12, 1940, the Moscow Peace Treaty, predatory for the Finns, was concluded. Stalin received everything he officially demanded, and even more. However, the Finns defended their independence, retained the armed forces and did not allow the red flags to be hoisted over the presidential palace, as Soviet leaflets wrote, "to the general rejoicing of the working people and intimidation of the enemies of the people." Instead of a neutral neighbor, the Soviet Union has a staunch enemy on the northwestern border, eager for revenge. Formally, the USSR won the war, but this victory turned out to be so inglorious that

they tried to forget about it. Hitler, who previously did not appreciate the combat effectiveness of the Red Army, from now on did not put it in a penny, which had an important influence on his

subsequent decisions.

In the course of this war, the previously outlined tendency to disperse aviation over military armies intensified. It was then that for the first time in practice the Air Forces of the armies and the Air Force of the front were formed with the allocation to them, respectively, of 49% and 36% of the available forces, another 15% was allocated to ensure the air defense of Leningrad. In fact, the control of aviation units in the course of hostilities was often carried out by the commanders of rifle corps through the system of "applications". In general, it was concluded that such an organization justified itself. On April 19, 1940, the Main Military Council noted: "The necessity of the division of the Air Force into army aviation, specially designed to interact with ground forces, and operational, acting in the interests of the operation and war, has been proved

with complete certainty." In mid-April, a meeting of the commanding staff of the Red Army under the Central Committee of the All-Union Communist Party of Bolsheviks was held, dedicated to "gathering experience in military operations against Finland." Speakers pointed to certain shortcomings in the training of troops, great claims were made against intelligence and logistics. But the hymns of magnificent and reliable Soviet technology, wonderful Soviet ammunition, heroic Soviet people sounded as a common refrain: "Each commander and Red Army soldier was warmed by the great love of our Soviet people. Each Red Army soldier went into battle, keeping on his lips the great name of Comrade Stalin, which was a great banner of victory, inspired heroism, was a great example of how to love and fight for our homeland ... We shoot better than the Germans shot in the old war. Now let's see how they will shoot in the west (laughter). We have excellent shells, very good shells ... Aviation personnel - flight crew and navigational, technical staff in the war showed themselves well. For example, in the regiments there was not a single case of engine failure due to technical fault, although they worked in severe frosts and at night. There was no material failure. There was not a single case that the pilots did not complete the task or the assigned task ... We put the Finns on their knees, and they were defeated because we threw out a sufficient number of bombs, shells, did not give them a single minute to rest. In his closing remarks, Stalin told

the audience that the Red Army was not just defeated the Finns, and, in addition, defeated Germany, France, England combined:

"General conclusion. What did our victory come down to, whom did we defeat, in fact? Here we fought for 3 months and 12 days, then the Finns knelt down, we yielded, the war was over. The question is, who did we defeat? Finns speak. Well, of course, the Finns won. But this is not the most important thing in this war. To defeat the Finns is not God knows what task. Of course, we had to defeat the Finns. We defeated not only the Finns, we also defeated their European teachers - we defeated the German defensive equipment, we defeated the English defensive equipment, we defeated the French defensive equipment. Not only the Finns were defeated, but also the equipment of the advanced states of Europe. Not only the equipment of the advanced states of Europe, we defeated their tactics, their strategy ...

We defeated not only the Finns - this task is not so big. The main thing in our victory is that we defeated the technique, tactics and strategy of the advanced states of Europe, whose representatives were the teachers of the Finns. This is our main victory." Hurrah, comrades!

Thunderous applause, everyone stands up, shouts of "Hurrah!". Exclamations:

"Hurrah comrade. Stalin! The participants in the meeting give a stormy ovation in honor of Comrade Stalin. Nevertheless, in anticipation of a clash with the Entente, Stalin once again shook up the top army leadership. First of all, K.E. Voroshilov, after him they "pushed" the Chief of the General Staff B.M. Shaposhnikov, commanders who "did not justify confidence" moved to secondary positions - Kovalev, Yakovlev, Chuikov, Stern, Dukhanov, Khabarov, Loktionov, Proskurov. The new People's Commissar S. K.

Timoshenko wrote about the state of the Air Force:

"The organization of the Air Force, due to the significant growth of aviation, is outdated and requires revision and merging into larger air formations (divisions).

The existing organization of air

bases does not provide maintenance of advanced operational airfields and their maintenance in working condition throughout the year. The flight crew is not sufficiently trained in

bombing, in

flights in difficult meteorological conditions and in shooting.

Aviation schools graduate weak pilots, trained mainly on the old materiel, and as a result, young pilots have to be retrained in units. The issues of service by the flight crew have not been worked

out, as a result of which, since 1938, there has been an incorrect situation when the Red Army soldiers of active military service, after a year of training in schools for junior specialists, are graduating under the category of middle commanding staff. Despite the large shortage of navigators, their training is not organized.

The accident rate and catastrophes in aviation continue to remain high due to the poor training of the flight personnel, their ignorance of the material part, low discipline, lack of organization of flight work and the irresponsibility of unit and brigade commanders for the accidents and catastrophes that have occurred.

In the USSR, more and more units of the air force were being formed. On February 1, 1940, there were 48 aviation brigade directorates, 149 air regiments, 49 separate squadrons, over 12.5 thousand combat aircraft; by the beginning of May - 58 air brigades, 188 air regiments, 38 separate squadrons. On April 29, by order of the head of the Air Force Directorate No. 063, the special-purpose aviation armies were disbanded, the formations that were part of them were poured into the air forces of the districts at the place of permanent deployment. At the same time, a transition to a divisional structure was being prepared. An interesting

coincidence, however, there is no coincidence here: it was in April 1940 that the tests of the I-200 high-altitude fighter and the VI-100 long-range escort fighter began. England and France continued to prepare for an air strike in

the Caucasus. Their reconnaissance aircraft began to take aerial photographs of the regions of Baku and Batumi.

The Soviet side, in turn, strengthened the grouping of troops on the southern borders. From March 25 to March 29, an operational game on cards was held with the highest and senior command staff of the Transcaucasian Military District, during which the "Reds", having repelled an enemy invasion attempt, beat the "Blacks" and "Greens" on the territory of Turkey and Iran with a "decisive offensive". In early April, troops from the Finnish front, as well as air formations, began to arrive in Transcaucasia. Until April, the ZakVO Air Force consisted of the 60th air brigade, the 5th long-range reconnaissance squadron, the 6th reconnaissance squadron and the air defense squadron. In April - May, the 3rd, 17th, 64th air brigades, and 9 air regiments were transferred to the district. In addition, the 45th air brigade and three air regiments were formed "on the spot". By June 1, the district's air force had increased from 246 to 1,023 aircraft. The long-range bomber regiments of the Transcaucasian and Odessa districts were ordered "to begin studying the Middle East theater of operations, paying special attention to the following objects: Alexandria, Beirut, Haifa, Istanbul, the Suez Canal, Port Said, Gallipoli, Ankara, the Bosphorus and Dardanelles, to work out possible routes, bomb load. In April, the "strange war" in the West entered a "hot phase". First, the Wehrmacht occupied Denmark without a fight, then carried out an

incredibly cheeky landing operation in Norway. On May 10, German troops invaded France. As soon as the Soviet

it became clear to the leadership that the French were suffering a crushing defeat, Stalin in June 1940 finally resolved the "Baltic question" by joining Estonia, Latvia and Lithuania to the "happy family of Soviet peoples." England at this point had enough of its own problems, and she did not mind. Hitler, forewarned in advance, also agreed and issued a circular warning the German diplomats that "in view of our unfailingly friendly relations with the Soviet Union, we have no reason to worry."

In parallel, there was a massive transfer of troops to the Kiev Special and Odessa military districts, which on June 9 were reorganized into the Southern Front under the command of General of the Army G.K. Zhukov. The Kremlin decided that the time had come to "restore historical justice" and demand from Romania the "voluntary" transfer of Bessarabia and Bukovina. For greater persuasiveness, a grouping of 460,000 soldiers and commanders, 12,000 guns and mortars, and about 3,000 tanks was deployed near the border. The air forces of the front united 21 fighter, 4 heavy bomber, 4 long-range bomber, 12 medium bomber, 4 light bomber regiments, in which there were 2160 aircraft.

There were also three airborne brigades, ready, on orders, to "jump out" behind enemy lines and disorganize them. The Romanian Air Force consisted of 200 morally and physically obsolete aircraft. It is very likely that Soviet planning was not limited to operations only in Bessarabia, there were also interests in Romania itself, Bulgaria, Iran and Turkey. In a conversation with the Italian Ambassador V.M. Molotov put the question directly: if Italy is ready to recognize the hegemony of the USSR in the Black Sea, then the Soviet government is ready to recognize the hegemony of Italy in the Mediterranean. On the advice of Berlin, Bucharest decided to

"voluntarily" satisfy Moscow's territorial claims, and by the end of July 1, the troops of the Southern Front, without encountering resistance, reached the new border of the USSR. The further movement of the Red Army to the south was stopped by the firm position of Germany, which declared its disinterest in the Bessarabian issue, but at the same time emphasized the inadmissibility of turning Romania into a theater of military operations and recommended "Soviet friends" not to cross the Prut and lower Danube rivers, "so as not to endanger our interests in the oil-producing regions."

The Soviet General Staff intensified the development of plans for the war "with the most likely enemy", which Germany was named for the first time, given the high probability of involving Romania, Finland and Hungary in a future conflict - it is clear on whose side, and assessing the total potential of the "fascist" Air Force at 14 15 thousand aircraft. On July 22, Hitler gave instructions for the development of operations against the Soviet Union. On July 8, the head of the Red Army Air Force, commander of the 2nd rank, Ya.V. Smushkevich submitted a report to the People's Commissar of Defense, in which he proposed the creation of 34 aviation divisions as part of 144 air regiments and the preservation of 34 separate regiments. The next day, the People's Commissar of Defense was presented with a mobilization request, according to which in 1941 the aviation industry was to produce 15,813 fighters, 17,522 bombers and 2,370 training aircraft.

On July 25, a resolution of the Council of People's Commissars "On the reorganization of the aviation forces of the Red Army" was adopted. From now on, aviation should have air divisions (4–5 regiments each) and separate air brigades (2–3 regiments each). Three types of air divisions were created:

- mixed, "having the purpose of direct interaction and support for mechanized, cavalry and combined arms formations";
- long-range bomber, "having as their purpose the destruction of military objects and disorganization of the rear of the enemy;
- fighter, "having as their purpose the struggle for air supremacy and cover for political and economic centers. By January 1,

1941, the Air Force should have had 50 air divisions, 239 air regiments, 62 corps squadrons - 15,672 aircraft in the state. In addition, the controls

four separate air brigades.

On November 5, 1940, by decision of the Politburo and the Council of People's Commissars, a program was approved for "strengthening", more precisely, doubling the air force. Instead of aviation armies, it was decided to create long-range bomber aviation, for which purpose - to allocate air regiments armed with TB-3, DB-3, TB-7 aircraft in a long-range air division of three regiments. It was supposed to form five DBA air corps, each of which was to include two bomber and one fighter divisions, three separate DD divisions and one separate air regiment. Lieutenant General I.I. Proskurov. During 1941, it was planned to create directorates for another 104 air regiments of regiments, including 22 regiments of long-range twin-engine fighters, 25 air divisions and bring the total number of aircraft to 32,000, of which 22,171 were combat.

In the same year, new charters for fighter and bomber aviation were approved. Regarding the TWO, it was written: "Long-range bomber aviation has the main purpose of undermining the military and economic power of the enemy by actions in his deep rear, destroying the linear forces of the navy, stopping and disrupting large-scale rail, sea and road transportation. Long-range bomber aviation operates outside tactical and operational communications with ground forces, in the interests of waging war as a whole. The main task of the other types of the Air Force was "the fight to destroy enemy aircraft both in the air and on the ground and to ensure the main combat missions performed by ground forces in close cooperation with them." After the unsuccessful November negotiations in Berlin, Stalin finally decided that "we will fight with Germany, and England

and the United States will be our allies." Hitler re-read Plan Barbarossa for the last time. In December 1940, a meeting of the highest command and

political composition of the Red Army.

At the meeting, the closest attention was paid to the discussion of the questions of carrying out crushing operations, ensuring the defeat of the enemy in a short time. In Soviet theoretical writings, before the theorists were shot down, there was a beautiful term: "Operations of the big style." The report of the Commander of the Kiev Special Military District, General of the Army G.K. Zhukov, "The nature of a modern offensive operation," outlined the main features of modern offensive operations of the front and the army, methods of using large tank and mechanized formations in cooperation with the Air Force, including when operating in the rear in the operational grouping of the enemy and in the development of operational success into a strategic one. The speaker showed the increased scope, depth and pace of the offensive, the need to use airborne assault forces to capture key installations and lines in the operational depth of the enemy's defense. Among the most important features of the operation, he attributed the continuity of the offensive operation of the front and the gaining of air supremacy:

"Supremacy in the air is the basis of the success of operations. This dominance is achieved by a bold and sudden powerful strike by all Air Forces against enemy aviation in its base areas. Only with air supremacy of the Air Force of the front will they be able to fulfill the tasks of direct combat assistance to shock armies ...

It will be a special concern of the army commander and the army air force commander to prevent their aircraft from being destroyed at airfields. **The best means for this will be a sudden strike by our aviation on enemy airfields** and a dispersed position of our aviation with camouflage of materiel and air defense at airfields...

Air strikes must be deployed in such a space as to suppress the bulk of enemy aircraft in the airfield-based areas, inflict defeat on it, disrupt the supply by rail and dirt roads, paralyze the entire system of rapid advance into the operational depth, must destroy operational actions (forces

enemy) in the rear and exclude the possibility of their operational maneuvering.

When breaking through enemy defenses: "During this period, army and front-line aviation concentrates the center of gravity of its combat work on direct support and cover for troops."

Lieutenant-General

P.V. Rychagov, who covered a number of issues, in particular, gaining air supremacy, the interaction of aviation with ground forces, strikes against the operational rear of the enemy, and others:

"The gaining of air supremacy is a necessary condition for ensuring the planned and successful development of the ground offensive operation of the front, and therefore the involvement of army and front-line aviation in it is imperative ...

The gaining of air supremacy in a front-line operation is achieved by:

- 1) the destruction of enemy aviation at airfields with a simultaneous strike on its rear areas (front-line bases, repair bodies, fuel and ammunition depots); 2) destruction of enemy aircraft in the air and over the battlefield; 3) the presence of superiority in forces.

The most difficult task to perform is the first task, since in order to complete it it is necessary to catch enemy aircraft at its airfields, and this, given the current basing depth and the ability of aviation to maneuver around airfields, is a great difficulty. Most of these raids will fail.

The best way to defeat aircraft on the ground is to simultaneously strike at to a large number of airfields of possible basing of enemy aircraft ...

Having won air supremacy, continue to maintain it, taking the main emphasis on working in the immediate interests of the operation. In the

debate about air supremacy, they talked a lot and with pleasure. We argued a little about how best to conquer it: by surprise attacks on enemy airfields or in air battles. There were no objections to the postulate that aviation should assist the ground forces in every possible way and solve operational tasks in cooperation with them. It was agreed that there should be both front-line and army aviation, and there should be a lot of both, and the flight personnel should be armed with the most modern equipment and excellently trained. The German principle of air force centralization, which made it possible to concentrate large aviation forces in one direction, was considered interesting, but the "inertia" of such an organization was also noted: "It must be taken into account that such a system has very serious disadvantages. With a weak air enemy, such as France, Poland and England (the last in 1939), the Germans could centralize the Air Force. But if the war is waged between two equal opponents, then such a rigid centralization will not lead to good. The information that in the Wehrmacht any company commander could request air support by radio was skeptical - a publicity stunt. The result of many years of disputes about the use of aviation was summed up by Marshal S.K. Timoshenko: "The decisive

effect of aviation lies not in raids in the far rear, but in joint actions with troops on the battlefield, in the area of a division, army."

Then, with the commanders, admitted to the most important secrets, they held operational-strategic games, during which options for the invasion of Europe were worked out on the maps. As insignificant, the

main thing was left out of the brackets: the Red Air Fleet is not capable of fighting for air supremacy with a serious enemy. They talked about this as separate shortcomings that would be planned to be eliminated by the time "when Comrade Stalin sends us into battle":

- aviation is prepared for simple types of combat, especially a large lag in flights under difficult meteorological conditions and at high altitude. fire

preparation, preparation of aviation for flights at high altitude and at night is low;

- operational and tactical training - in disrepair; - the leadership of the

Air Force does not have a unanimity of views on the use of aviation in operations; - the most difficult thing is

the actions of the air force with horse-mechanized army. We haven't actually worked it out. This is a purely theoretical question;

- if the military councils do not deal with the creation of a rear for the Air Force, this most important issue will not

be resolved; - in order to work smoothly, good means of communication are needed in time, which aviation should have. The available means of communication today do not provide reliable communication with the ground command and do not provide control in battle. Aviation needs its means of communication.

What is the general conclusion? Here it is: "We have found the source of military thought, from which it will rapidly spill over into all the pores of our military organism. We began to truly carry out the instructions of Comrade Stalin on raising the military-ideological level of our command cadres and laid the foundation for the creation of our own military ideology.

1940 ended. The Red Army finally had a military ideology. What if there is a war tomorrow? On January

1, 1941, the Air Force had 26,392 aircraft, including 14,628 combat and 11,438 training aircraft. Moreover, 10,565 vehicles (8392 combat vehicles) were built in 1940. In February, the General Staff presented a new mobilization plan, according to which the Air Force was planned to have: directorates of aviation corps - 5, directorates of aviation divisions - 79, directorates of individual air brigades - 5, long-range bomber regiments (DB-3) - 36, heavy bomber regiments (TB- 3) - 6, bomber regiments - 102, twin-engine fighter regiments - 22, fighter regiments - 149, light assault regiments - 15, mixed regiments - 3, separate reconnaissance regiments - 10, separate reconnaissance squadrons - 42, separate communications squadrons - 39, corps squadrons - 76, detachments of observation balloons - 24. Almost immediately, the formation of the "missing" 106 air regiments and five airborne corps began. In total, after mobilization, the Air Force was supposed to have 343 air regiments with a total of 32,628 aircraft, of which 22,171 combat aircraft (including 11,920 bombers, 11,957 fighters) and 10,457 training and auxiliary aircraft. The fact is that the Soviet commanders came to the conclusion about the need to transfer about half of the front-line aviation to the combined arms armies. For tactical interaction with the troops of each army, which

was to operate in the main direction, it was planned to allocate 2-3 air divisions of mixed composition, operating in secondary directions - one air division each. The remaining forces were left at the disposal of the front command and were used to solve operational tasks in the interests of the front. To solve more global problems, there was the Aviation of the High Command.

In principle, the idea is sound, like any ideal design. That's just for its implementation required not just a lot, but a lot of aviation formations and aircraft. According to pre-war views, it was planned to have from 15 to 30 front-line and army aviation divisions at the front, which ranged from 2,700 to 9,000 aircraft. The Soviet Union was the only country that managed to successfully solve this problem. Another thing is that the issue of the effective use of large aviation formations remained a "thing in itself", and in the initial period of the war, when thousands of combat vehicles were lost, the air forces were increasingly dispersed among the armies. So, at the beginning of 1942, the share of army aviation on the Western and Kalinin fronts was 83%, which excluded the centralized control of aviation and its massive use on a frontal scale. Going on the Great Campaign, Stalin did not forget about such an important matter as strengthening

discipline, and gave the military a little bloodletting - to maintain tone. Aviation, as you know, he was especially fond of. The reason for the repression was the innocent complaint of "one of the designers" that the Air Force Research Institute "slows down the testing" of a good Mig fighter and misleads the Central Committee of the All-Union Communist Party of Bolsheviks.

In April - June 1941, the Chekists arrested the deputy head of the Main Directorate of the Air Force, divisional engineer I.F. Sakrier, head of the 8th directorate, military engineer 1st rank P.K. Nikonov, head of the experimental department of the Armament Directorate of the Air Force, military engineer of the 1st rank G.F. Mikhno, head of the 4th department of the Air Force Research Institute, brigade commander A.I. Zalevsky, head of the research and testing range for aviation weapons, Colonel G.M. Shevchenko, head of the department of the same test site, inventor of the Onisko buckets, military engineer 1st rank S. G. Onisko, head of the experimental department, military engineer 1st rank **V. Ya.** Tsilov, Head of the Air Force Research Institute and Deputy Head of the Main Directorate of the Air Force, Major General A.I. Owl. Then came the turn of figures of a larger caliber. From the very

beginning, the NKVD was sure that the engineers were trying to disrupt the rearmament program not on their own initiative, but on the instructions of high-ranking foreign intelligence agents. In the operational information of the NKVD officers, the causes of car accidents were presciently linked to the counter-revolutionary activities of a powerful, clandestine anti-Soviet organization. The proletarian instinct did not let down the "organs of Comrade Beria." The last proof that overflowed the bowl of Stalin's patience was the unexpected landing on May 15 at the Central Aerodrome of Moscow of the German Junkers-52, which flew into the capital from Bialystok, spitting on the "special regime" of the Soviet sky and freely bypassing all air defense posts. Everything fell into place - in the depths of the Air Force, another "right-wing Trotskyist conspiracy" ripened like a purulent abscess.

In the last days of May, the arrests of the top leaders of the Air Force, the heroes of Spain, Khalkhin Gol, and the war with Finland began, which continued until mid-July. In total, about 30 military aviators or commanders known in the country who were directly related to aviation were taken - the best shots at that time. Most, under the weight of indisputable evidence in the form of rubber batons, confessed to "atrocities", the essence of which was participation "in a military conspiratorial organization, on whose instructions they carried out enemy work aimed at reducing the combat training of the Red Army Air Force and increasing the accident rate."

Assistant Commander of the Air Force of the Orel District, Major General of Aviation E.G. Schacht, a Swiss by birth, "transferred espionage information about Soviet aircraft construction to the Germans." The former commander

of the Air Force of the Moscow Military District, Lieutenant General of Aviation P.I. Pumpur, for five months of his command, completely deprived the district of combat capability.

Assistant Inspector General of the Red Army Air Force for Military Educational Institutions Divisional Commander HH Vasilchenko - "carried out sabotage."

Deputy Chief of Staff of the Red Army Air Force, Major General of Aviation P.P. Yusupov.

Former Assistant Chief of the General Staff for the Air Force, Lieutenant General of Aviation Ya.V. Smushkevich. Deputy

Commander of the Air Force of the Leningrad Military District, Major General of Aviation A.A. For a long time Levin headed the Directorate of Military Educational Institutions of the Air Force, worked with "enemies of the people", knew all their ins and outs and "did not expose". And all because he himself was "a pest and a German spy."

Head of advanced training courses for Air Force commanders, brigade commander I.I.

Black. Commander of the air division of the Leningrad Military District brigade commander A.I.

Orlovsky. Commander of the Air Force of the Far Eastern Front, Lieutenant General of Aviation KM Gusev - traditionally worked on the Mikado.

Assistant Commander of the Air Force of the Volga Military District, Lieutenant General of Aviation P.A. Alekseev. This one "carried out sabotage in the armament of the Air Force, accepted defective and incomplete aircraft from the industry, delayed the re-equipment of air units with a new materiel."

Head of the Personnel Department of the Main Directorate of the Air Force, Major General of Aviation V.P. Belov. He dragged "unverified and politically dubious people" into leadership positions. The

former head of the Main Directorate of the Air Force of the Red Army, Lieutenant General of Aviation

P.V. Levers. Chief of Staff of the Red Army Air Force, Major General of

Aviation P.S. Volodin. Head of the Air Force Academy, Lieutenant General of Aviation F.K.

Arzhenukhin. Former head of the Intelligence Directorate of the Red Army, head of the Air Force of the 7th Northern Front Lieutenant General of Aviation I.I. Proskurov.

Commander of the Air Force of the Western Front, Major General A.I. Tayursky - "a spy for German and French intelligence."

Commander of the 9th Air Division of the Western Front, Major General of Aviation S.A.

Chernykh. Former head of the Main Directorate of Air Defense of the Red Army, commander of the Air Force of the Southwestern Front, Lieutenant General of Aviation E.S. Ptukhin "carried out subversive work aimed at weakening the combat readiness of the Red Army, recruited new participants in the conspiracy", spied and committed other "counter-revolutionary crimes."

Chief of Staff of the Air Force of the Southwestern Front, Major General of Aviation HA

Laskin. Commander of the Air Force of the North-Western Front, Major General of Aviation A.P. Ionov "carried out sabotage in airfield construction."

It is felt that the investigators were too lazy to even fantasize, all the accusations are "home-made" samples of 1937. It is not even clear who was at the head of the "conspiracy", and for the sake of what "barrel of jam" he was villainous. Doesn't matter. The theoretical substantiation of Stalin's paranoia was laid out on paper by the ever-memorable Nicolo Machiavelli: "Since all people love according to their orders, and fear according to the orders of the Prince, the wise Prince must rely on what depends on him, and not on others."

Almost all the defendants, including Rychagov's wife (her - for the fact that "she was a beloved wife"), were destroyed without trial according to the lists. Only A.I. was spared. Zalevsky and A.I. Orlovsky: they were "given a term", but in the camps they lasted suspiciously long, only one year.

In the first half of May 1941, when a large-scale transfer of Soviet troops from the interior of the country to the West began in the deepest secrecy, Marshal S.K. Timoshenko ordered the commanders of the border districts to develop a "detailed plan for the defense of the state border" in case the enemy tried to interfere with the mobilization, concentration and deployment of the Red Army. The general task of the aviation of the "cover armies", according to the guidelines, was to "take active actions to gain air supremacy and powerful strikes against the main railway junctions, bridges, stages and groupings of troops to disrupt and delay the concentration and deployment of enemy troops."

At the headquarters of the Leningrad district, of course, they outlined targets on the territory of Finland. The

Air Force of the Baltic Special District planned strikes against the "established bases" of the enemy, the railway junctions of Koenigsberg, Marienburg, Eylau, Allenstein, Insterburg and bridges across the Vistula. The headquarters

of the Western Special District was going to powerfully and systematically bomb Koenigsberg, Marienburg, Thorn, Kalisz, Lodz, Warsaw, bridges and airfields in enemy territory. The "Note" noted: "Fighter aircraft cannot escort bombers when performing this task, their radius does not allow

actions".

Bombers of the Kyiv Special District targeted objects in Silesia and Southern Poland - Czestochowa, Katowice, Krakow, Kielce, Breslau, Oppeln, Kreizburg.

Aviation of the Odessa Special District, together with the 4th long-range bomber air corps and the Air Force of the Black Sea Fleet, were supposed to cover the mobilization by bombing Bucharest, Constanta, Brailov, Ploiesti, Botoshan, oil depots and oil refineries. On June 21, 1941, the Soviet air force

was the largest in the world. They numbered 79 aviation divisions, 5 aviation brigades, 348 air regiments. The number of personnel reached 440 thousand people, which was 70% of the state. Most of the aircraft were located in the border districts, on the basis of which front-line departments had already been formed.

There was very little left: to complete the strategic deployment, wait for some kind of provocation by the "Hitler fascists" on the German-Soviet border and give the "Thunderstorm" signal. At dawn

on June 22, 637 German bombers, escorted by 231 fighters, launched a surprise attack on the 31st Soviet forward airfield. Then another 35 airfields located at greater depths were attacked by 400 bombers. "At the beginning of the war, the peoples of our country were amazed, like a

thunderbolt from a clear sky, when they heard on the radio a message about the insidious attack of fascist Germany on the Soviet Union. Our people have always been aimed at waging war on foreign territory, and we were inspired that "in every propeller the calmness of our borders breathes." But the unfortunate inhabitants of the western front line, alas, learned about the beginning of the war, when bombs suddenly rained down on them. By evening, on the ground and in the

air, Soviet aviation had lost 1,136 combat aircraft. The North-Western Front lost 98 vehicles, the Western Front - 738, the South-Western - 277, the Southern - 23.

Okay, they screwed up, who doesn't happen to them, but, in fact, no catastrophe happened, the Soviet Air Force was still many times superior to the enemy. Even in the most affected air forces of the Western Front, more than 1000 combat aircraft remained in service, including 500 fighters, and in the rear of the front, at Smolensk airfields, the 3rd long-range bomber air corps was based, which was operationally subordinate to General Pavlov. Of course, there are not enough forces for the march to East Prussia, but it is quite possible to fight. The fact that the enemy destroyed most of the aircraft on the ground was even a plus - in the sense that the crews survived. In addition, according to reports, the enemy also had losses.

The catastrophe happened a little later, when there was no surprise anymore, and Soviet losses amounted to 230 aircraft per day, when the entire air regiments began to disappear, when, during the "maneuver inland", hundreds of combat vehicles were left abandoned at airfields. So, the Western Front entered the war with 1043 fighters, and a week later there were 124 of them.

For 18 days, about 4,000 Soviet and about 450 German aircraft irretrievably perished in border battles. By mid-July, the strength of the Air Force of the North-Western Front was reduced to 102, the Western - to 346, the South-Western - to 337 serviceable aircraft. On July 31, at the headquarters of the Air Force of the Red Army, 5240 aircraft were entered in the column "unaccounted for loss", at the headquarters of the Luftwaffe, the recorded loss on the Eastern Front amounted to 670 aircraft. Until the end of 1941, the Soviet air force lost almost 18 thousand combat aircraft, of which 10.3 thousand were destroyed by the enemy. The fight for air supremacy was lost.

Chapter 4



So ...

So, the quantity, as Tupolev expected, did not work out. It would be more accurate to say "quantity" was not enough.

General M.M. Gromov thought about this problem after the war:

"Aviation is a type of weapon in which **quality, not quantity, plays an especially important role**. This applies both to technology and to the training of people. Aviation is strong in its mobility, the ability to quickly change targeting and methods of destruction ... We considered mass character to be

important, as opposed to quality. **And this was indicator of the weakness of our aviation culture.**" But

even before the war, it was clear that modern aviation technology should be operated by competent people, that a pilot should be able to fly, fly well, fly not just like that, but inflict damage on the enemy, that is, hone not only flying, but also tactical skills, constantly learn, accumulate experience. That superior commanders must use aviation correctly, taking into account many factors, "keep control over the actions of subordinates, direct the course of the battle according to their will, and not as the enemy wishes."

The innocently murdered brigade commander

Lapchinsky wrote: "Superiority in the air does not consist in flying a lot, but in flying with more efficiency than the

enemy flies, and this "sensitivity" is determined by how much the air forces provide opportunities for their troops and prevent enemy troops from using the results of combat work in the air and from the air.

In the 1920s, Weimar Germany had no military aviation. However, the leadership of the country and the army even then took a number of measures, which subsequently contributed to the rapid revival of the air force. In order to retain the most valuable personnel, General Seeckt formed special departments at the headquarters, in which - with very limited officer vacancies - there was a place for 180 pilots of the First World War, listed as consultants "with special duties." Their task was, for example, to convince the commander of an infantry unit during maneuvers to take into account the possible actions of aviation, friendly or enemy, when planning combat operations and making decisions.

In 1924, with the direct submission of the Reichswehr, ten sports aviation schools were opened in the country, under the roof of which former military aviators were retrained and new ones were trained. The enthusiasm of German youth for gliding has become truly massive. Another reserve was the pilots and ground crews of Lufthansa.

Real training on real combat vehicles became possible in 1925 with the opening of a secret air base in the Soviet Union. Over the next eight years, 120 German pilots and 100 observer pilots completed courses in Lipetsk. In addition, on the basis of the Lipetsk experience, the same number of specialists were trained in Germany itself. Many Germans took part in the maneuvers of the Red Army. When, in April 1933, Hermann Göring took over the newly created Imperial Aviation Ministry, he did not have to start from scratch:

"He had at his disposal selected pilots who were undergoing military flight training in Russia and were ready for any mobilization. 15,000 glider pilots and 1,000 airmen belonged to 300 private, paramilitary flying clubs, which Göring organized into the huge "German Sports Aviation League". There were about 100 good airfields in the country,

many meteorological stations and a network of radio stations. In addition to this, Germany had Lufthansa, one of the best and largest airlines in the world. Lufthansa flew more kilometers and carried more passengers than the French, British and Italian airlines combined, and its pilots and many aircraft could easily and quickly be used for military purposes.

By the time Hitler openly announced the existence of his own air force in the spring of 1935, they had 1,888 combat vehicles and 20,000 personnel. In August 1939, there were 373,000 people in the air force, taking into account the paratroopers, anti-aircraft artillery and communications battalions. Including 20 thousand flight personnel.

The initial combat training of conscripts was carried out in 23 aviation training regiments and 2 naval aviation battalions. Every year 60 thousand people were trained here. For their further education, there were 21 pilot schools, 10 schools for the combat use of aviation, and 2 aviation technical schools. The officer corps was replenished mainly at the expense of Oberfanen-10nkers, who graduated from special aviation educational institutions. Officers were trained in four air force schools and two academies: air force and military technical.

Special attention was paid to the training of pilots. The Luftwaffe had 8,000 advanced pilots who had the right to day and night driving any military aircraft. By the beginning of World War II, about 25% of all pilots had mastered the skill of blind piloting. In 1941, a fighter pilot, leaving flight school,

had more than 400 hours of total flight time, of which at least 80 hours were **in a combat vehicle**. After that, the graduate got into the reserve air group, where he added another 200 hours. At the Nuremberg trials, Field Marshal Albert

Kesselring testified: "Everything was done to make the German air force, in terms of its personnel, combat qualities of aircraft, anti-aircraft artillery, air communications, etc., the most formidable fleet in the world."

We admit that the Germans succeeded. Including because, for the most part, the crews of German aircraft were superior to the enemy in individual skill, group flying and combat tactics. Meanwhile, in the

Red Army, the process of training specialists was steadily sliding towards simplification, for which there were always "good" reasons: the fight against accidents, the need to save fuel, save materiel, personnel shortages in the growing by leaps and bounds air force. In order to give the pilots more flying practice, there was not enough fuel, airfields, training aircraft. As a result, as the Commander of the Air Force of the Moscow District, brigade commander I.T. Eremenko: "The vast majority of the flight personnel arriving at the military units do not meet the flight requirements." In June 1939, Voroshilov, in order No. 070, demanded that an independent raid on a combat aircraft at Air Force schools be

increased to 30 hours. And at the same time - to exclude high-altitude training and aerial shooting from flight programs. If something is broken or canceled, then we execute it instantly. It is more difficult to raise, increase, improve. Still unknown to anyone A.I. Pokryshkin, having graduated from the Kachinsky school in 1939, flew ten and a half hours on the I-16; graduates of the same school in 1940 - from 8 to 10 hours. In March 1940, the Air Force schools were transferred to accelerated training with the following training periods: pilot schools - 12 months, schools for pilots and aircraft technicians - 12 months, aircraft mechanics schools - 8 months, gunner-radio operators school - 5 months. And in order to reduce the accident rate, they stopped teaching aerobatics. At the April meeting on the results of the war with Finland, commander P.V.

Rychagov raised the issue of the inability of the "Stalin's falcons" to fly in difficult weather conditions, in particular, and the poor training of a significant part of the flight crew in general, and indicated the main, in his opinion, reason:

"This situation seemed difficult because in peaceful conditions we dealt with these things very cowardly, indecisively, because we have a number of provisions when we report for each accident and catastrophe in three or four institutions in different directions. The military council of the district very rarely asks us about the state of readiness of our aviation. Usually, by phone or in a personal conversation, they ask: "Did something happen?" If something happened, let's dig to the root. Sometimes this root is that a person, mastering the heights of aviation technology, put the car out of action, but when investigating the accident, **they try to find reasons why the commander would look either undisciplined or suspicious.** In any case, after this accident, the pilot is not allowed to fly, and only six months or a year later he is allowed to fly again ... In conclusion, I would like to say that our aviation has gained rich experience in flying in difficult meteorological

conditions. It is necessary right now by direct special order of the head of the Air Force, the people's commissar, to force this experiment to continue and demand flights, without fear of any events, accidents, catastrophes, because our commanders are not particularly trained in large-scale flights ... If a catastrophe happened to us, then in analysis of this catastrophe, the commander who should analyze this catastrophe takes the

last place. This catastrophe is being handled by a large number of organizations that are showing a lot of hype. The commander is not visible behind these organizations ...

I must say that we have made a huge omission in the air force due to the fact that we are afraid of catastrophe, accident and all sorts of events. We were only concerned with the pilot, so that he would not break something, so that he would not do something superfluous, and we missed the letnabs. We are bombing very badly now. True, the comrades who watched the bombing of the Germans say that the Germans are not distinguished by a high class either, but ours, it must be admitted, are lower. So this year, first of all, it is necessary to press on the letnabs, which are abandoned, the course taken for the pilot must be left in fighter aviation, and in bomber aviation, the course should be taken for the letnab, take the

course for the crew ... We now have literally hundreds of hanging pilots in aviation, who cannot be allowed to fly for various reasons and who are difficult to demobilize, since there are many barriers to this; these loafers willy-nilly hang out in our fleet for many years, they do not find a place

for themselves. As one of the measures to increase the combat readiness of the Air Force, Rychagov suggested issuing a law prohibiting a commander who graduated from flight school from marrying for two or three years, and devoting this time to improving his skills: "I will give such an excuse to this. Our pilot is formed during the first two or three years. If a pilot arrives - tears look at him - a lieutenant is 23 years old, he has 6 people in his family, will he master a high class? He won't master it, because his heart and soul will be at home. We need to make such a law.

Thus, pilots who not only did not learn complex aerobatics, but did not even really master the "takeoff and landing", to whom the commanders were simply afraid to entrust the aircraft, poured into the combat units en masse. On August 28,

based on the results of an inspection of 28 air regiments in seven military districts, People's Commissar Timoshenko issued order No. 0200, which "established" the main reasons for the "high accident rate":

"1. Extremely low discipline, laxity and disorganization in the units of the Red Army Air Force. As a result of weak control, orders, charters and instructions for flight operations that regulate flight work are not firmly and consistently implemented ...

A large number of drunkenness with brawls, unauthorized absences and others

immoral offenses incompatible with the title of commander, Red Army soldier, characterize the low state of discipline and give rise to accidents.

2. The organization of combat training in many regiments is unsatisfactory. The planning of combat training is carried out "out of time and space", which is a consequence of ignorance of the preparedness of the squadrons and leads to the setting of overwhelming and unrealistic tasks.

The squadrons have not yet learned how to approach the pilot individually - to set tasks in accordance with his training, as a result of which accidents and disasters occur. The district air force commanders did not understand the need for

consistent learning parts...

3. Navigator training in most units, and especially in fighter units, is at a low level. Knowledge of the basics of navigation is weak. There is an excessive amount

loss of orientation, including among the leading command staff.

4. As a mass phenomenon - poor knowledge of the material part of the flight and technical staff. The pilots and part of the commanders are poorly aware of the data of their aircraft and motor.

Pilots, not knowing the material part, are afraid to control the work technical composition.

The commanders of units and subunits, not knowing the material part of the aircraft and the engine themselves, do not require and do not check the knowledge of the personnel subordinate to them ... Technical training is poorly developed, and in a number of regiments it is not available throughout the summer, which leads to a poor state of the without fuel, with the clamps not removed, not knowing how to emergency release the chassis and how to switch the gas tank valves. 5. A large number of breakdowns, accidents and disasters occur during takeoffs and landings of

aircraft. This suggests that important elements of piloting technique, takeoff and landing (!) have not been worked out by young pilots.

6. Checking the piloting technique is poorly organized, is carried out irregularly and not within the time limits specified in NPP-38 No. 69. A review of flight books showed

that the errors noted during the verification of piloting technique are not eliminated, but only fixed, i.e. the most outrageous disgrace deliberately occurs when a pilot with known and uncorrected errors continues to fly on a more difficult task, does not cope with it, repeats mistakes, hits the plane and dies himself. 7. In Air Force units, the positions of commanders of regiments, squadrons and units are occupied by commanders who do not have sufficient experience in leading units and subunits.

Unit commanders do not have instructor and methodological experience, they do not know how to show and teach your subordinate.

The commanders of the air forces of the districts, the commanders of divisions and regiments did not understand the need to especially teach and educate personnel, but left them to themselves. This leads to the fact that the flight and squadron commander does not know how to build work, makes mistakes that cause accidents.

In the command part, as usual, it was required to eliminate the shortcomings as soon as possible. Of course, they eliminated and reported. In window dressing and eyewash the Red Army had no equal. On September

3, summing up the command and staff exercises of the 1st Rifle, 6th Mechanized Corps and two aviation divisions, during which it was discovered that different branches of the military were waging a "war" independently of each other, Marshal S.K. Tymoshenko said:

"We still have a lot of lies. There are cases when a lot comes up, but in fact, if you touch deeper into the essence of the matter, then there is a lot wrong with what you were told about. I think,

that this kind of nonsense still lives with us, but its root is not in the people themselves, our people are good, but **in our system**. It is for the restructuring of this system that we must now undertake, to cultivate in ourselves an intolerant attitude towards any, even the slightest

shortcoming. The people's commissar himself was tightly soldered into the system, and therefore, summing up the results of combat and political training, the first thing he stated was that the summer period of 1940 "was a turning point in the education and training of the army on a new basis, proven by experience of combat requirements" - the very kind of nonsense.

In the autumn of 1940, the Soviet Air Force had 37,558 pilots and 81,563 aviation specialists. Since in a year it was planned to have over 32,000 aircraft and 60,000 flight crews in service, another 22,400 pilots and 63,400 aviation technicians should have been trained for their operation. To do this, it was proposed to increase the staff of existing schools by 7680 people and form 33 new schools. At the same time, it was necessary to expand the network of operational airfields, the number of which did not ensure the normal operation of aviation, and to form new aviation technical companies. The implementation of all these measures required an increase in the staffing of the Air Force to 54,2746 people.

On November 5, the Politburo adopted a resolution "On the recruitment of schools and schools for pilots of the Red Army Air Force", according to which "to ensure the recruitment of schools and schools" Osoaviakhim had to additionally prepare 20 thousand U-2 pilots for the People's Commissariat of Defense by May 15, and the Civil Air Fleet - 10 thousand pilots by October 1, 1941. At the same time, "in order not to ruin the industry by diverting labor from it," the contingent for training should be recruited mainly from schoolchildren in grades 9–10, employees and collective farm youth.

On December 7, the Main Military Council discussed the draft "Regulations on the service of the flight personnel of the Red Army Air Force", which concluded that aviation was "heavily loaded with command personnel" and proposed to transfer all the middle commanding staff, who held positions below the squadron commander, to the position of a junior officer. On December 11, the council approved a proposal to change the terms of service in the Air Force and the recruitment system for military schools. Now, instead of voluntary recruitment to flight schools, they received the right to recruit cadets from the next call for active military service.

On December 22, 1940, the People's Commissar of Defense issued an order according to which a new term of service in the Air Force was established - four years. Pilots, navigators and aircraft technicians who did not serve this term, who held a position below the squadron commander, regardless of rank, from February 1, 1941, were transferred to the barracks. Their families should have been "sent back to their homeland" or resettled somewhere else. In any case, they had nothing to do in the air camps, and what they would do behind the fence, the marshal did not care. Graduates of aviation schools instead of an officer's rank received triangles of sergeants in their buttonholes.

These events, on the one hand, made it possible to save a lot of "people's money", on the other hand, they were called upon to "improve aviation" in the sense that pilots, unencumbered by family concerns, would be able to give all the heat of their hearts to their beloved combat vehicle, devote all their time to combat preparation, recklessly, completely and completely surrender to military affairs, because this is required by the "interests of the country's defense." This is where, it turns out, the root of all problems was buried: "The family, located near the pilot, constantly reminds of itself. Such a split of the pilot's attention and energy, the inability to concentrate entirely on the task of combat training, lowers the level of the pilot's combat training and makes him unprepared. The poor preparedness of the flight crew inevitably leads to accidents and catastrophes, and in a combat situation it will lead to the fact that a poorly trained pilot will be shot down by the enemy. General P.V. Rychagov was delighted: "Order of the People's

Commissar of Defense No. 0362, approved by the government, is the beginning of an organized Air Fleet. The old organization of the Air Fleet has outlived itself. Now we need a massive Air Fleet, well organized and mobile. In the old Air Force organization we

they didn't have it. Order No. 0362 puts things in order, allows you to raise discipline among the ordinary flight personnel. The role of the commander is rising and the young man - the pilot, who must learn to fly and fight, from the very beginning of the service will not be burdened with a

family. I want to give you one example. In Zaporozhye the air garrison has a small number of heavy ships, but it has a colossal number of children; on average, there are 12.5 children per aircraft. This has so far led to the fact that the young pilot and technician, burdened with a family, have lost all maneuverability in the event of a movement of the unit. In addition, a pilot connected by a large family loses combat effectiveness, courage and wears out physically prematurely. The order of the People's Commissar of Defense

eliminates the existing shortcomings in this regard, creates normal conditions for the operation and growth of the air fleet, which, with a common understanding of its use, will bring many victories.

In general, the idea was liked by all the "big bosses". Major General A.A. Novikov, commander of the Air Force of the Leningrad District: "Your order 0362 brings a historical turn in the life of the Air Fleet, it puts an end to the source that gave rise to weak discipline and disorganization in aviation. With the transition to the barracks position of the bulk of the flight and technical personnel, it will be possible to improve not only the state of military discipline, but also to a large extent raise the quality of combat training and the combat readiness of air units. Assistant Chief of the

General Staff for the Air Force, Lieutenant General Ya.V. Smushkevich directly called the presence of a family of a combatant pilot "the only and main reason" for the low level of combat training of the air forces: "I think that the bulk of the flight crew will understand that without the transfer of the enlisted flight crew to the barracks position, the combat air fleet cannot be combat-ready. Without the fact that the flight personnel will be completed in the same way as the entire Red Army is completed - not on a voluntary basis, but on a mandatory basis, we will not have good pilots.

And you can't call them stupid. Rather, there was a real lack of understanding in which country the generals live, the desire to redistribute responsibility, the inability, I would say, the impossibility, to establish combat training in the conditions of "our system." Well, and the usual hypocrisy of people who made a career.

At the December meeting, General Ya.V. Smushkevich reported on a serious reduction in 1940 of programs "for night training, for high-altitude training and for flights in the clouds, that is, for the most difficult types of combat training": "I want to say about night training, with which we are bad. For example: the entire Leningrad district flew 141 hours on bomber aircraft, that is, what 3 pilots should fly a year. The Oryol district flew only 36 hours, and there is the 51st regiment there, which flew to Belarus in the spring of 1940. This old regiment did not fly a single hour at night. The Transcaucasian Military District is a little better, but even there night training is reduced to almost nothing. The entire district flew only 331 hours at night for bombing. We are working poorly on radio navigation. Even on a business trip, our bombers at night, as a rule, fornicate. At night, without radio navigation, it is impossible to conduct large flights. Those radio stations that are available, the radio compass, are not being studied in parts. Bomber crews solved the tasks of bombing 2-5 times a year. Fighters learned to shoot at a cone at a speed of 200-250 km / h, "because at high speeds the cones come off." It would be better to shove everyone into the barracks and start "completing

complex tasks", finally study the semi-radio compass. True, for example, in the Leningrad Military District there were 35 young pilots for one training "donkey" UTI-4 - no more than ten could fly on it during the day, if the weather did not interfere and there was gasoline: "As a rule, every year we in the midst of flights in the summer, starting from July, and sometimes from June, the supply of gasoline stops, parts go on starvation rations, curtailing flights because of this in the best months for flights (June, July,

August). This situation is no longer tolerated. You can't fly without fuel. The normal supply of gasoline begins again from October, when, in fact, flights begin to curtail due to weather conditions, and airfields get wet.

In the new academic year, the People's Commissar of Defense set the task for the Air Force to learn to fly higher, faster and farther, day and night, in any weather conditions, to work out the interaction between troops and naval forces, to learn fighter aviation in conducting group air combat at high altitudes and to improve in bombing with diving and shooting at ground targets, reconnaissance to teach photography at night, bomber - to strike from behind the clouds, assault - to storm with a fury. Literally ten days later, Rychagov's instructions were to limit

aerobatics on I-16 and I-153 fighters with M-62 and M-63 engines - and there were about 9000 units - to limit by 80%. "On the I-16 aircraft of a number of series, as well as on the"

seagulls", there were high-power motors and variable-pitch propellers," recalls General V.F. Golubev. - The maximum rotation speed of the propeller in flight is up to 2500 rpm and even more. And 2300 rpm were considered acceptable. It was also not allowed to fly at speeds less than 2100 according to the instructions, which surprised the technically competent pilots and technicians of the regiment.

The reason for these restrictions were several accidents that occurred due to the stop of the engines. And while the designers were working on eliminating flaws in the work of the material part, the pilots had the right to fly only if the roll was not more than 45 degrees, the speed did not exceed 400 kilometers per hour, and the dive angle was not more than 35 degrees. Aerobatics and air combat were strictly prohibited. It was possible to do only combat turns in single and group flights.

The winter of 1940/1941 turned out to be snowy, however, like all other winters. However, it was this winter that it was decided to put an end to the "Asianism": instead of "changing shoes" for aircraft from wheels to skis, it was ordered to clean airfields, as in Europe. There was a lot of snow, there was no airfield equipment. As a result, in the winter period of training, the flight time per pilot on average for the Air Force was 16 hours, specifically in the Kiev Military District - 6 hours, and in Orlovsky - 2 hours and 12 minutes. Blind flight accounted for 5.2% of the total flight time, night flight - 4.6%. Dive bombing training was not carried out at all.

Conclusions on the acceptance of comrade Sbytov and the surrender of comrade Pumpur of the Air Force Moscow military district:

"During the winter period of 1941, combat training and combat readiness in the Air Force units of the Moscow Military District were in an unsatisfactory state. The development of a new material part was carried out extremely slowly. In fact, the training of pilots in bombing, aerial shooting, air combat, cross-country flights, high-altitude, blind and night flights has been disrupted.

In the presence of 1197 pilots in the district, only 346 bombings were carried out. At the same time, only 191 bombings, or 55 percent, were carried out with positive results. to the number of flights. 723 shootings were carried out at cones and shields, and 387 shootings were carried out [with a positive result, or 50 percent. Only 78 air battles were conducted in the district.

At night, 103 pilots flew with a flight time of 206 hours; they did not work out combat use at all at night. Altitude training in the district is disrupted. During the entire winter period, high-altitude raids throughout the district amounted to 45 hours and 27 minutes, and not a single pilot rose above 7000 meters. Moreover, only some commanders flew to the heights, and not

ordinary pilots. As of May 1, 1941, there were 248 pilots who did not fly combat aircraft, or 23 percent. There

was no frightening retraining for the 24th Air Division, the flights were not organized intensively, the 27th Fighter Regiment did not fly MiG-3 aircraft.

flies, although since April 1, 1941 it has 11 aircraft ...

Simultaneously with the poor results of combat training in the district, the accident rate has sharply increased. During the disasters, 29 people were killed and 18 people were injured; there are 31 accidents, 103 breakdowns and forced landings.

The situation is especially difficult in the 23rd Air Division. The personal report of the division commander, Comrade Andreev, and as a result of a special check of the division, it was established that all four regiments of the division were almost completely not engaged in combat use and are currently incapacitated ...

During the winter period, the units of the 24th Air Division did not conduct a single exercise on interaction with air defense systems. Not a single alarm with the departure of fighters was carried out. The control of fighters in the air from the air defense command post has not been worked out at all, radio communications are not used, and pilots in radio control do not train ...

Comrade Pumpur dealt with issues of combat readiness of units poorly, as a result of which, in March 1941, an NPO inspection found that almost all units of the MVO Air Force were not combat-ready: machine guns were not adjusted, bomb racks were not adjusted, units were not engaged in combat use; combat readiness for alarms has not been worked out ... "

Summing up the results of the winter period of training, the People's Commissar of Defense stated that the combat training of the Red Army Air Force was unsatisfactory, and none of the tasks of "unburdened families" by aviators was completed. Retraining for new types of aircraft was carried out at a slow pace. The operation of the new materiel by the flight crew is poorly mastered. Low levels of combat training were accompanied by a large number of disasters and accidents.

On April 9, 1941, by a decree of the Central Committee of the All-Union Communist Party of Bolsheviks and the Council of People's Commissars of the USSR, Lieutenant General P.V. Rychagov was removed from his post as "undisciplined and failed to cope with the duties of the head of the Air Force" and sent to study at the Military Academy of the General Staff: "The facts say that due to laxity, on average, 2-3 aircraft die in our country every day in accidents and disasters, which is 600-900 aircraft per year. The current leadership of the Air Force has proved incapable of leading a serious struggle to strengthen discipline in aviation and to reduce accidents and catastrophes. The leadership of the Air Force, as the facts show, not only does not fight for compliance with the rules of the flight service, but sometimes itself pushes the flight crew to violate these rules.

Interestingly, the rapidly growing Luftwaffe also suffered considerable losses as a result of accidents and disasters. For eight months, from August 1, 1940 to March 31, 1941, the Germans lost 575 aircraft for these reasons. At the same time, 1368 people were killed, 50 were missing and 804 were injured. But the German command could not even think of limiting the training of its pilots to fly in circles and turns with a pancake, because the main thing in aviation is the level of crew training, otherwise there is no need to burn gasoline.

In the Soviet country, all sorts of "indicators" were put at the forefront, which had to be constantly improved. General Rychagov spoke about this, General Proskurov wrote about this to the Leader: "Specialists believe that under

the existing rules for flight service in the Air Force, they will not be able to fulfill the tasks assigned to them - the restrictions are too great. They visited several units of the Air Force and made sure that the fear of the commanders of the responsibility for flights in difficult weather conditions and at night was too great. Accidents are serious and there are many of them, it is true, but the interests of the cause demand an even greater increase in the intensity of flight work, tirelessly improving the organization and order in the Air Force ... Dear Comrade. Stalin, in our history of aviation there was no case when a commander would be tried for poor preparation of a unit subordinate to him. Therefore, people involuntarily choose the lesser of two evils for themselves and reason like this: "I will be scolded for shortcomings in combat training, well, in the worst case, they will be demoted by a step in my position, and I will go to court for accidents and disasters." Unfortunately, commanders who think this way are not isolated. Such sentiments have and will

take place until the same requirements and responsibility are presented for the combat readiness of the subordinate unit as for the accident rate.

On February 25, 1941, the resolution of the Central Committee of the All-Union Communist Party of Bolsheviks and the Council of People's Commissars of the USSR "On the reorganization of the aviation forces of the Red Army" was approved, according to which a new personnel training system was established. In pursuance of the decision of the People's Commissar of Defense on March 3, he issued order No. 080 "On the establishment of a training system and the procedure for recruiting universities of the Air Force and improving the quality of training of flight and technical personnel."

The new personnel training system provided for the creation of schools of initial training with a course of 4 months in peacetime and 3 months in wartime with a total flying time per cadet of 30 hours, as well as schools of military pilots with a course of 9 months in peacetime and 6 months in wartime with bombers 20 hours and fighters 24 hours.

The task of the first was to teach piloting on a training aircraft and give general knowledge of aviation technology, aviation theory and military training; secondly, to teach piloting and use of a combat aircraft in simple weather conditions, group flights as part of a flight and to give practice in cross-country flights as a member of a flight with landing at unfamiliar airfields. Fighters, in addition, needed to be taught initial aerial firing and the basics of air combat, and bombers - diving at an angle of 40 degrees. During the year, on the basis of flying clubs, 30 primary schools

with a total annual graduation of 45,000 people should be formed, and by June 1, 5 military aviation schools should be created to train Air Force commanders. In aviation schools, a two-year training period was established instead of three years in peacetime and one year in wartime, with a flight time of 75 hours per year. The first set was to be trained in a one-year course. Schools were to be completed by pilots who had served in the ranks for at least two years. In combat units, a total flight time of 160 hours was established for each pilot. By June 1941, the USSR

had 3 academies, 4 military aviation schools, 2 advanced training courses for Air Force command personnel, 2 higher schools for navigators, 29 primary schools, 21 schools for fighter pilots, 22 schools for bomber pilots, 12 schools for bomber gunners, 16 aircraft mechanic schools. In addition to this, there were naval aviation schools, training squadrons of the Civil Air Fleet and schools for the training of junior aviation specialists - minders, gunsmiths, air gunners. In principle, the terms of training established by Timoshenko's order differed little from Voroshilov's "accelerated training" and noticeably from the system that existed in the first half of

the 1930s, when the pilot was trained for 3-4 years, although the technique was much simpler. Independent flight time on combat vehicles at military pilot schools was reduced to 15 hours for fighters and 12 hours for bombers. Even before the deployment of new schools and colleges, the existing ones were staffed by 44.1% of the teaching staff, and only 41.4% of their needs were allocated fuel.

The "chief pilot" in the war was considered the conqueror of air supremacy, "the proud falcon of our Motherland" - a fighter pilot, masterful in technique, eager to fight, a brave and cold-blooded air fighter. Lapchinsky pointed out: "PILOTAGE FOR AIR FIGHTER IN ITS MOST COMPLEX FORMS SHOULD BE A COMPLETELY HABITATIVE, AUTOMATIC MATTER, ABOUT WHICH IN BO10 ALREADY IS NO TIME TO THINK, a matter as familiar as the process of walking for a pedestrian

or ride for a cyclist.

From this it is clear that the fighter pilot requires the highest training and is always the best pilot. He is most concerned with maneuvering in the air in three dimensions. Meanwhile, Soviet aviation schools let

out herds of young pilots without the necessary flight experience and experience in the hope that they would gain it in combat units, and there, as

we remember that they were trained "for simple types of combat." In flight, all the attention of such a pilot was occupied by controlling the aircraft and keeping his place in the ranks, like a person sitting on a bicycle for the first time in his life. They did not observe, did not know how to distinguish "their" planes from "aliens", did not orient themselves in space, and were easily "shot down by the enemy."

"Some Russian pilots did not even look around and rarely looked back. I shot down a lot of those who were not even aware of my presence," recalls G. Barkhorn. The huge losses of the Red Army and the territorial

successes of the Wehrmacht led to the fact that fighters were sent to the front, which had 5-8, and sometimes 2-3 hours of flight time. They were not trained in tactics, or aerobatics, or even aerial shooting.

"As the regimental commanders said," recalls M.M. Gromov, - such fighters "except for the engine hood in front of them, did not see anything." Because of this, our losses, both human and aircraft, were very large, and most importantly, unjustified. That's what the concept led to: quantity, not quality. Industry in difficult conditions produced a huge amount of equipment, which was lost in vain due to the unpreparedness of young pilots.

The low level of professional training was exacerbated by the use of outdated tactics. The main combat unit remained a link of three aircraft with minimal intervals and distances between vehicles, not capable of maneuvering at high speeds. "Hawks" flew in tight formations, rushed into battle "in a crowd, an excessively large number of aircraft, often interfering with each other, regardless of the number, battle formation of the enemy, his intentions and capabilities." The order of battle of pairs was legalized only in November 1942. One of the reasons why Soviet fighters remained for so long committed to tight combat formations, where the pilot had to watch not so much the air situation as to avoid crashing into a neighboring car, was the lack of radio communications.

The pilots, in the old fashioned way, sought to fight on turns - to go into the enemy's tail, while losing speed and altitude. The Germans did not get involved in the "dog dump", they swiftly fell from above, hit point-blank and at great speed went "to the vertical", giving rise to "seditious thoughts" in the Soviet pilots about the superiority of German technology. Almost always, such an attack was successful. The compilers of Fighter Aviation Tactics explained: "If a fighter is at the top, then after a dive attack,

it can give a huge rate of climb for a short period and go up an extremely steep" slide. This, by the way, creates a misconception among some pilots about the actual data of the German Me-109 fighter. The pilot, seeing the Me-109, skipping past him at high speed and leaving the "candle" up, does not take into account that all this is achieved not so much due to the qualities of the aircraft, but due to tactics, due to the advantage in altitude, which gives a sharp increase in speed and rate of climb. Influenced by personal experience. Such a pilot attributes non-existent, imaginary advantages to the Me-109 - fabulous speed and rate of climb.

Gold words. Only now, they were written in 1943. In the meantime, under the influence of the "personal impression" of the visible advantage of the enemy, the "Stalin's falcons" tried to avoid the battle as much as possible, let the "tambourines" fly for themselves, so long as they do not touch.

In early September, I.V. Stalin received a memorandum from the Stalingrad Front, which was signed by the Deputy Supreme Commander General of the Army G.K. Zhukov, Secretary of the Central Committee of the All-Union Communist Party of Bolsheviks G.M. Malenkov and the commander of the Red Army Air Force, Lieutenant General A.A. Novikov: "Our fighters, even in cases where there are several times more of them than enemy fighters, do not engage in battle with the latter. In those cases when our fighters perform the task of covering attack aircraft, they also do not engage in battle with enemy fighters, and the latter attack attack aircraft with impunity, shoot them down, and our fighters fly to the side, and often simply go to

their airfields ... Our troops observe such shameful behavior of fighters daily".

Even the German bombers were not afraid of Soviet fighters: "All reports from the commanders of German bomber units indicate that in 1941 Soviet fighters did not pose a threat to German bomber formations and often avoided combat with the latter." If they nevertheless attacked, they often acted tactically illiterate: not knowing the vulnerabilities and the location of the firing points of the bomber, from unfavorable angles, they opened fire from excessively long distances, and instead of cockpits and engines they fired at crosses on the fuselages.

"Air superiority does not consist in flying a lot, but in flying with really."

It doesn't seem to take a genius to understand the "depth" of this thought. German fighters have always been aimed at destroying the enemy, they solved the problem of seizing air supremacy, engaged in "free hunting" or provided the work of their bombers. The bulk of the Soviet fighters were used to solve defensive tasks, the main of which was to cover their ground troops, even if no enemy was observed in the air: "Do not allow enemy air strikes on Soviet troops." From morning to evening, Soviet air patrols loitered over the battlefield, raising the morale of the infantry with their presence. In order to continuously keep the planes in the air, they were sent on a mission in small groups, that is, they turned into a fiction their multiple numerical superiority over the Luftwaffe. The initiative was completely voluntarily conceded to the enemy, who imposed the battle in the most favorable conditions for himself. Moreover, proudly "ironing the air" in close formations, at low altitude and low speeds, Soviet aircraft were an ideal

target.

Rall recalls: "The Russians in the air turned into endless and useless sorties with a very large numerical superiority, which continued from early dawn until late twilight. There were no signs of any system or concentration of effort. In short, there was a desire to keep aircraft in the air at all times, in constant patrol missions over the battlefield.

Therefore, on the Eastern Front, there were always 6–10 times fewer German fighters than Soviet ones - there were enough of them.

Experience was again accumulated at the cost of blood, and very slowly. Since aviation regiments were brought to the rear for reorganization only after they were completely knocked out, there was practically no one to transfer this experience to. Untrained youngsters went into battle again. As a result, even in the summer - autumn of 1942, a significant part of the Soviet fighters still did not know how to conduct group air combat, and the followers could not keep their place in a link of two or three aircraft. Soviet bomber aviation was exclusively engaged in supporting

ground operations and did not solve any strategic tasks. According to enemy observations: "The targets of the attacks were positions of infantry and artillery or concentrations of troops and reserves at a distance, usually from 10 to 15 km from the front line. Such combat missions were carried out, first of all, against objects beyond the reach of artillery; other times they supported the artillery barrage." This fully applies to the Aviation of the High Command. On the second day of the war, long-range bombers, together with naval aviation, bombed Danzig, Königsberg, Warsaw,

Krakow, Bucharest, however, without visible effect. On the night of August

10-11, 1941, bombers of the naval aviation of the Red Banner Baltic Fleet and the 81st heavy bomber air division made a symbolic raid on Berlin. In general, the Soviet bomber aviation in 1941 acted with little success and was subjected to a merciless beating.

The main reason for the low performance is the lack of qualifications of pilots and

navigators, which caused the low accuracy of bombing. The leader, often only he alone had a map with the flight route, led the group lined up in a "wedge" to the target, his navigator took aim and dropped bombs, the rest bombed from level flight "along the leader", without aiming.

The main reason for the high losses is the illiterate father-commanders of all ranks, who are unable and unwilling to engage in mental activity, "volitionists" and "Bolsheviks", who easily ignored instructions on the combat use of aviation, who did not know how to plan a battle, who did not make informed decisions, but, similar to unicellular, spontaneously responding to external stimuli. This was also discussed at the December meeting by General Ya.V. Smushkevich: "The whole trouble lies in the fact that we are happy to read an article by some correspondent, especially a translated one, but we don't read our charters and don't know them. The whole trouble is that we do not put into practice what we know, the trouble is that we do not train our Air Force how to carry out the forms of combat use of the Air Force known to us. By the way, on the eve of the war, 46.2% of Soviet aviation commanders, starting from the regimental commander and above, had only a primary general education.

Trying to correct the catastrophic situation on the fronts, the Soviet command directed all bomber, including long-range, aviation to strike at the enemy's rapidly advancing tank and mechanized columns. The bombers were actually used as attack aircraft, operating from a height of 100-400 meters, without fighter escort, and died en masse from attacks by German fighters and anti-aircraft fire. For a long time they were no longer fast, with weak defensive weapons, the SB disappeared in whole groups.

So, the commander of the 3rd long-range bomber air corps, Colonel N.S. On June 22, Skripko received from the front headquarters the task of "destroying the enemy's motorized and mechanized troops in two areas - Suwalki, Sejny, Avgustov, Kvitmotis and Sedlec, Yanov,

Lukov" and involuntarily thought: "Where are our troops, what information is available about the enemy in the area of \u200b\u200bour targets? No one could give an exact answer to this question. It was necessary to clarify the air and ground situation in the area of our combat operations ourselves, to detect the largest and most dangerous concentrations of Nazis who had broken

into the operational depth and to bombard the enemy. Long-range bombers are designed, of course, to perform other tasks. But if the air corps is ordered to destroy enemy mobile troops that have broken through on our territory, then this, of course, is a forced measure and is caused by an alarming situation, I decided. Front Air Force Headquarters accepted our applications for overflight of long-range bomber aviation regiments and soon confirmed that the route would be communicated to fighter aircraft and ground forces. When I requested cover, General I.I. Kopets

categorically declared: "We can't cover with fighters! .. The crews went up to the mission after a short rally, at which pilots, navigators, air gunners-radio operators swore to give all their strength, and if necessary, their lives, to protect the Soviet Motherland."

On the first day, the corps lost 26 DB-Zf vehicles, up to 25% of the materiel needed to be repaired. Soviet fighters, controlled by "young pilots", not only did not cover their bombers, but, on the contrary, not orienting themselves in the situation, "did not pay attention to the signals of the missiles:" I am my own plane "and went to intercept."

On June 24, over Bereza-Kartuzskaya, Messers shot down 8 out of 9 Ilyushins of the 212th long-range bomber regiment, and in the 207th regiment, out of 18 aircraft that flew to the Pruzhany region, eight returned. As Skripko writes: "The tactics used by the air regiment to strike with links, bombing at intervals of 15 minutes from a height of 800-600 meters without fighter cover, did not justify itself." Actually, THIS is a crime, and tactics, by definition, are the ART of building troops and fighting.

The apotheosis of hysterical stupidity was the operation to destroy the crossings across the Western Dvina near Dvinsk and across the Berezina near Bobruisk on June 27–30. At the

beginning, DB-3 from the 1st long-range bomber air corps of Major General V.I. worked on the bridges in Dvinsk, captured by the corps of General Manstein. Izotov. On June 30, they were bombed by 93 SBs, DB-3s and Ar-2s of the Baltic Fleet Air Force. "In these days, Soviet aviation made every effort to destroy the bridges that fell into our hands with air raids," Manstein recalls. - With amazing tenacity, at low altitude, one squadron flew after another with the only result - they were shot down. In just one day, our fighters and anti-aircraft artillery shot down 64 Soviet aircraft. The crossings remained unscathed, which allowed the Germans, having waited for reinforcements, to continue their offensive in the Baltic. It was not possible to disrupt the crossing of the 24th motorized corps near Bobruisk. On June 30, the pontoon crossing and

the equipment accumulated near it were attacked by aircraft of five aviation divisions. Despite the fact that the crossing and the approaches to it were covered by a large number of anti-aircraft machine guns and small-caliber artillery, and German fighters continuously loitered in this area, the Soviet command did not provide any escort or special forces to suppress air defense. Moreover, in order to achieve "continuous impact on the enemy", bombers, including TB-3, were sent to the target at short intervals by separate squadrons and links.

The German fighter squadron JG51 that day reported the destruction of 113 Soviet bombers.

According to Soviet data, on June 30, Soviet bombers in the areas of Dvinsk and The Berezins lost 110 vehicles, not for a minute slowing down the advance of the enemy.

On July 4, in order to "preserve and most appropriately use" long-range aviation, the Stavka subordinated it personally to G.K. Zhukov, who on the same day signed another "deadly" directive:

"The use of aviation for operations against objects and troops has shown that part of the aviation is spent inappropriately. An object that can be hit by 3-5 aircraft is attacked by large groups of aircraft. Bid ordered:

1. Flights to bomb objects and troops in large groups are strictly prohibited. 2. From now on, sorties for bombing one target at the same time no more than one link, in extreme cases, a squadron.

That is, the great strategist reduced the strike capabilities of the DBA to zero and at the same time deprived the crews of any hope of survival.

German bombers flew throughout the war in close, compact formation - still the Spanish experience. This limited the number of directions from which each aircraft could be attacked by fighters, and also made it possible to concentrate several bombers on the attacking fire at once.

Soviet bombers mastered such tactics only in 1944, probably, Zhukov had already allowed. In mid-September, 25 mighty

TB-3 machines accounted for 40% of the Air Force of the Western Front. Such criminal use of bomber aviation led to the fact that 7200 out of 8400 combat vehicles were lost by the end of the year. Long-range aviation practically ceased to exist - separate

regiments fought, most often playing the role of front-line aviation. On December 22, 1941, only 266 serviceable aircraft remained in the DBA (182 Il-4 and 84 TB-3), as well as a dozen Pe-8s and Yer-2s. The revival of the DBA occurred only in 1942, but until the end of the war, long-range aviation continued to play the

role of long-range artillery, acting in the interests of the ground forces

and practically without independent operations. All of the

above fully applies to the training and combat use of attack aircraft, with the only difference that they died more often, since they did not have a rear gunner. Pilots for reconnaissance aviation were not

trained anywhere at all. brigade commander

Lapchinsky, thinking about the concrete realities of the war, wrote:

"Reconnaissance is the most dangerous and most exciting job of aviation. At the same time, it provides for the calm and safety of thousands of earthly fighters, making them aware of the situation. The responsibility of a scout is great, and the importance of his work can hardly be overestimated. A scout must

think in terms of the scope of the operations he serves. **Intelligence service the most "mental" work of aviation.**

Danger, consciousness, significance and responsibility make exceptional demands on the scout. He must be clear about his work. For his mistakes, negligence or dishonesty, the masses for whom he works are paying. The accuracy, timeliness and completeness of his data gives these masses peace and self-confidence. Let us add that an aerial reconnaissance aircraft must be able to fly in the most difficult meteorological conditions, be able to navigate perfectly in a ground situation, be able to use various types of equipment, and rely only on oneself in flight. All this presupposes a set of certain qualities.

However, priorities have changed. Intelligence in the Red Army was replaced by the expectation of directives, the analysis of information by thoughtless execution of orders. Therefore, the incapable, poorly versed in the technique of piloting and combat use of bomber pilots and fighters were written off to reconnaissance aviation. In the certification they wrote: "Due to poor piloting technique and poor general education, it is not possible to use it in bomber or fighter aircraft. To be transferred to reconnaissance aircraft. Moreover, in 1940-1941, in connection with the deployment of new aviation schools, the most experienced reconnaissance pilots were sent to teaching. Their place was taken by youths who actually did not know how to fly, who had no idea about the specifics of reconnaissance, who did not know the devices of the camera, who did not have "skills for transmitting data from an aircraft". "One of the biggest shortcomings," writes M.M. Gromov, - there was a lack of a "school" for teaching the ability to fly in the clouds ... it turned out that intelligence - the eyes of the army - could not fly in bad

weather! Moreover, intelligence departments were abolished in some district air force headquarters. The Germans were amazed at this attitude to intelligence. "The training of reconnaissance pilots was completely neglected. There were no special schools. This fact cannot be explained, especially

considering that the Air Force had to support the army and navy.

In the conditions of the outbreak of hostilities, the red commanders did not need the materials of the last plenum of the Central Committee of the All-Union Communist Party of Bolsheviks, but reliable and operational data on the enemy. As a result, in just a month and a half of the war, all reconnaissance aviation regiments of the air forces of the fronts suffered heavy losses and lost their combat effectiveness, and in October-November almost all of them were disbanded. As of January 1, there were 94 reconnaissance aircraft in service, working on instructions from the General Staff and the Air Force commander. The revival of reconnaissance aviation began only in May 1942, but the Red Army did not receive a specialized reconnaissance aircraft until the

end of the war. The commander of the bomber group, Colonel Freiherr von Beust, writes: "At the beginning of the campaign, the Soviet Air Force had a six- or eight-fold superiority in numbers. However, they failed to keep up with the times in matters of organizing combat work, training flight personnel and the technical level of their aircraft fleet. Therefore, the Soviet

The Air Force as a whole was a large and unwieldy instrument of little combat value, any element of which could be destroyed by the Luftwaffe within a few weeks of being in range of Soviet aircraft. If the Soviet Union did not have such a large territory that allowed for the reorganization, training and replenishment of units in safe areas beyond the reach of the Luftwaffe, and if there were not such large human and material reserves, Soviet aviation would never have recovered from the blow inflicted on it at the beginning of the war.

The pre-war strength of the Soviet air force will be restored by 1943 year.

Qualitatively, the RKKF will never reach the level of the Luftwaffe. If you use Voroshilov's associations: An airplane is more complicated than a steam locomotive. An aircraft designer, an engineer, a pilot are "more difficult" than a plumber or a commissar. Science is more complex than Marxism. The Air Force is much more "complicated" than the Regional Committee of the Party. The "system" that absorbed Lenin's contempt for mental work, cultivated violence as a universal key to solving any problems, operated on the "masses" and ignored the "units", convinced that fear is the best motivation, prison and barracks are the best forms of organization for any activities, the system, which believed that there was not much difference between the collective farm and the Air Force, and the cook could run the state, had a chance to win the war only by numbers.

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